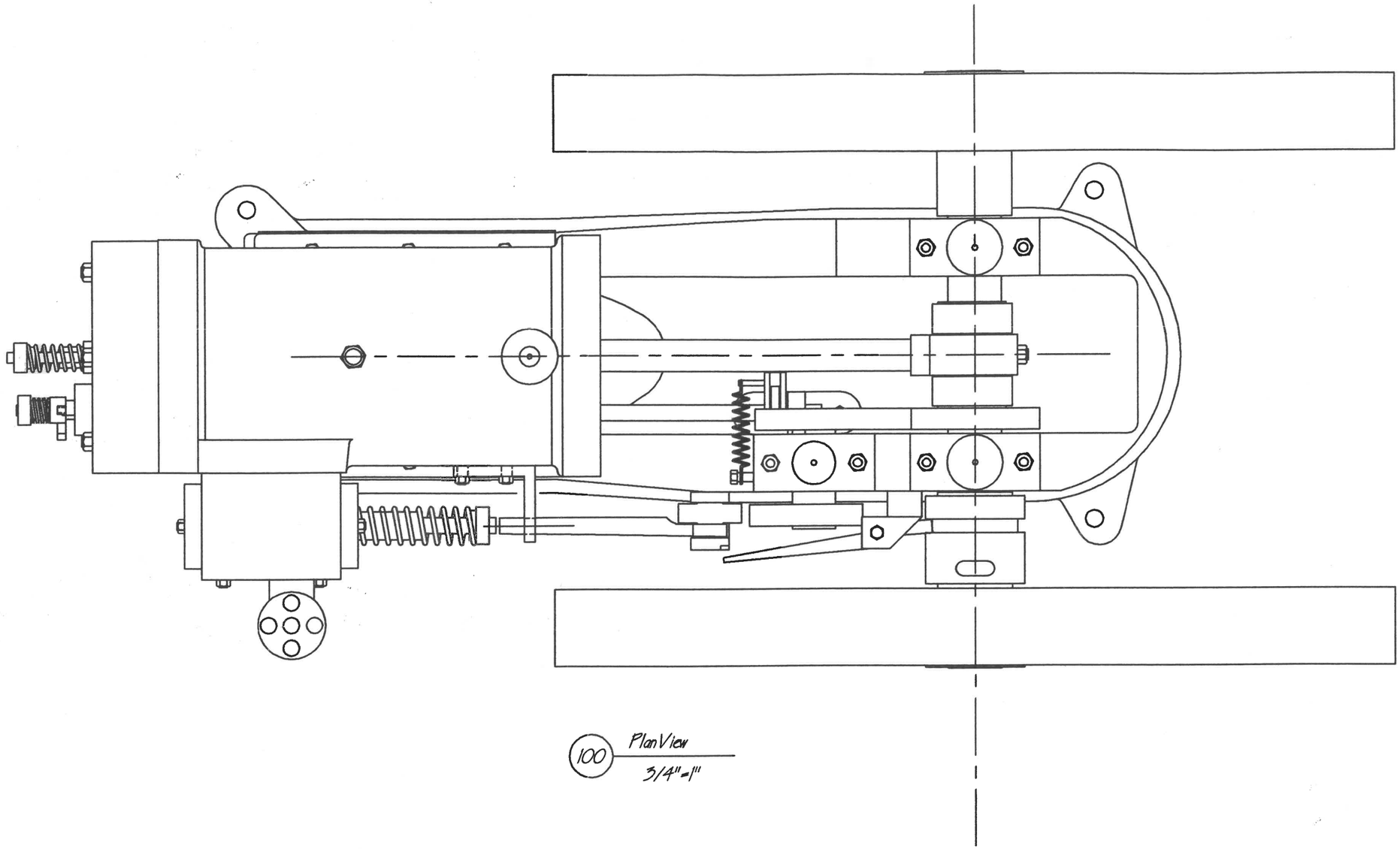
REV.	BY	DESCRIPTION OR ECO #	DATE



100 Plan View
3/4"=1"

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF TOM STUART AND SHALL NOT BE REPRODUCED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/6/2005	SCALE: 3/4'=1"	DRN. BY: W. Austin	DESIGNER: Tom Stuart	Model Scale: 1/6±

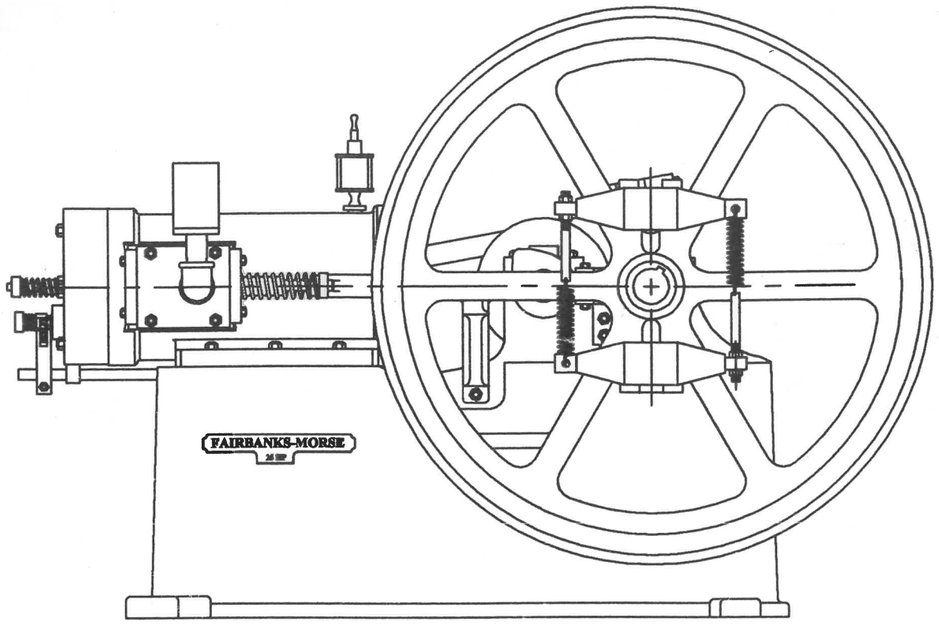
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-1A

Plan View

SHEET: 2 of 24

REV.



Dia. = Diameter
R = Radus
ID = Inside Diameter
OD = Outside Diameter
CB = Counter Bore
CD = Counter Drill
BC = Bolt Circle
⌀ = Diameter
℄ = Center Line

DP = Deep
Typ = Typical
NPT = National Pipe Thread
MPT = Model Pipe Thread
D&T = Drill and Tap
Plc's. = Places
Thd. = Threads
Req'd. = Required
Thru = Through
S/S = Stainless Steel

CRMS = Cold Roll Mild Steel

FAIRBANKS-MORSE
25 HP

FM-1	Index and Data Information
FM-1A	Plane View Assembly
FM-1B	Left Side View Assembly
FM-2	Flywheels
FM-3	Crankshaft and Main bearings
FM-4	Governor Assembly
FM-5	Engine Base and Main Bearing Caps
FM-6	Cylinder Block and Cylinder Sleeve
FM-7	Connecting Rod, Wrist Pin and Piston
FM-8	Exhaust Chamber, Exhaust Valve Guide, Chamber Cap and Exhaust Valve
FM-9	Front End Elevation Assembly
FM-9A	Rear End Elevation Assembly
FM-10	Head, Intake Valve Guide and Intake Valve Assembly
FM-11	Carburetor and Ignitor Rocker Arm Assemblies
FM-12	Ignitor Assembly
FM-12A	Ignitor Details
FM-13	Exhaust Valve Push Rod, Push rod Pivot Arm, Cam Roller and Governor Detent Arm and Ring
FM-14	Muffler, Exhaust Valve Push rod Guide and Ignitor Trip Arm Transfer Shaft Standard.
FM-15	Cam, Camshaft, Cam Bearings, Timing Gears and Ignitor Trip Lever Arm
FM-16	Fuel System, Tank, Filler Unit and Foot Valve
FM-17	Oiler Assembly
FM-18	Water Pump Assembly and Details
FM-19	Screen Cooler w/ Stand Assembly
FM-19A	Screen Cooler Details

Note: 1. Paint with Dupont Dulux #72001 D or Forester Green

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(PL) = Push Fit w/ Loctite
(PU) = Push Fit
(R) = Running Fit
(F) = Force Fit
✓ = Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 01/21/2006	SCALE: FULL	DRN. BY: W. Austin	DESIGNER: Tom Stuart	Model Scale: 1/6±

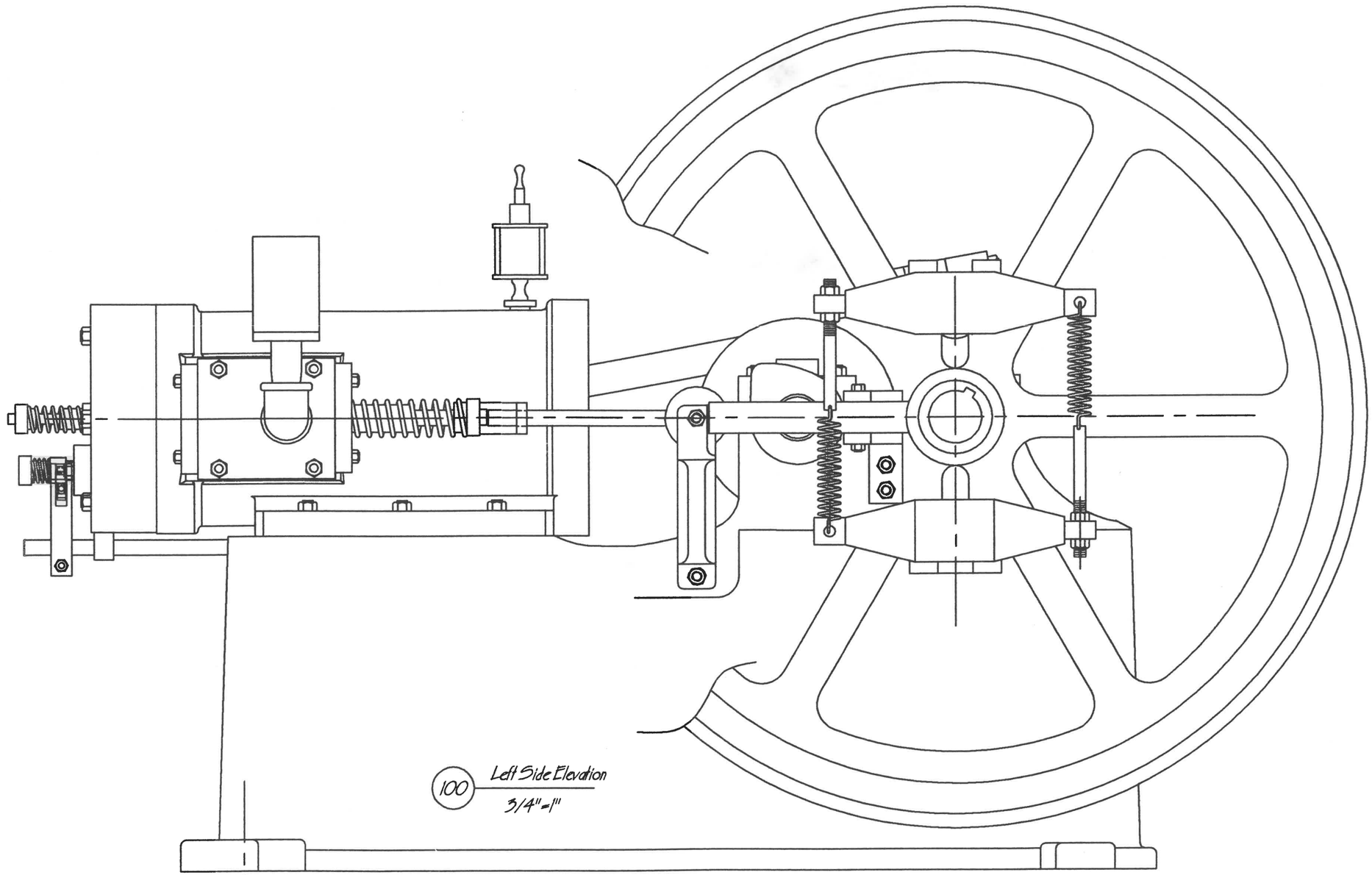
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-1

Index And Data Information

SHEET: 1 of 24 | REV.

REV.	BY	DESCRIPTION OR ECO #	DATE



100 Left Side Elevation
3/4"=1"

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TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/6/2005 | SCALE: 3/4"=1" | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

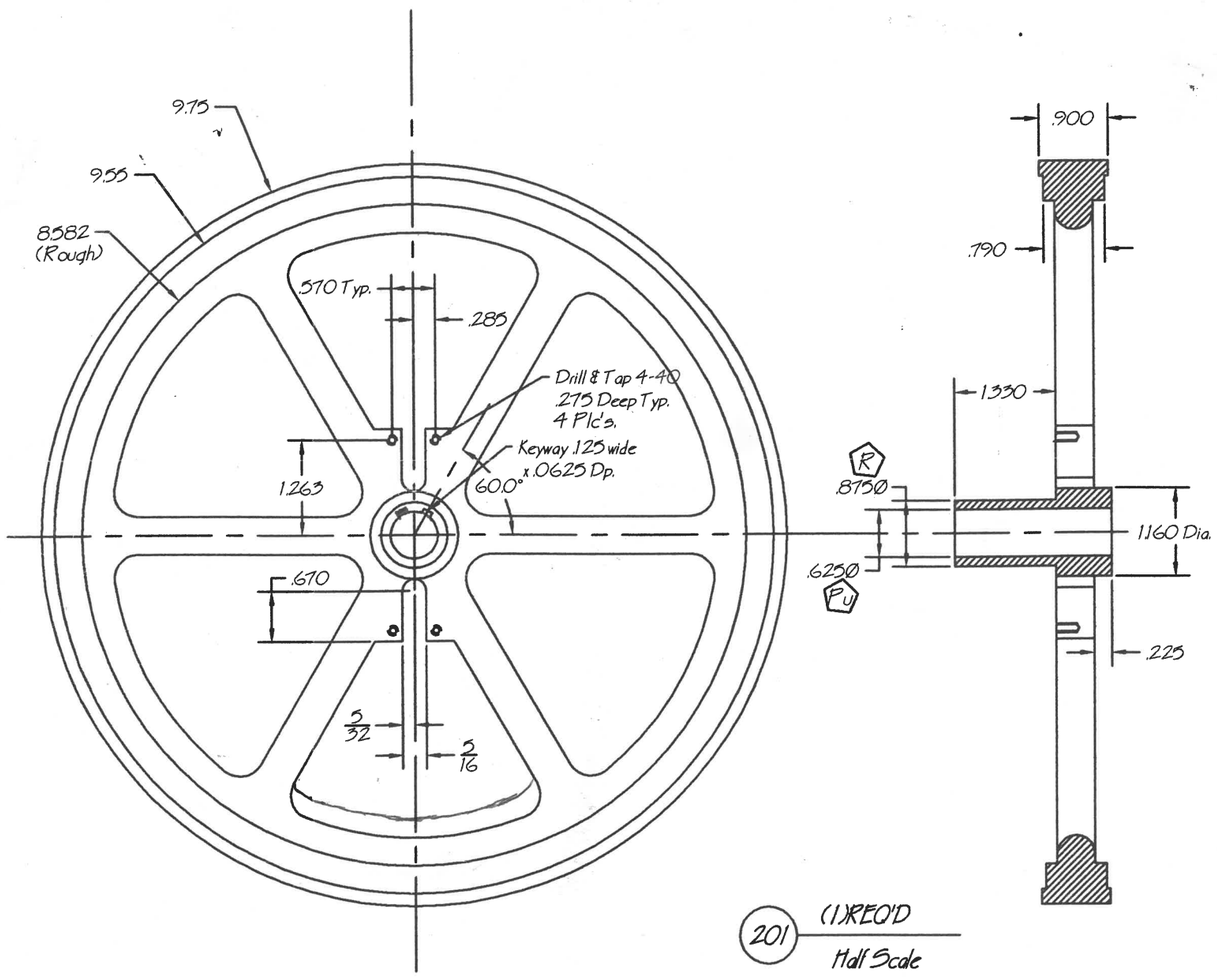
DESCRIPTION
Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-1B

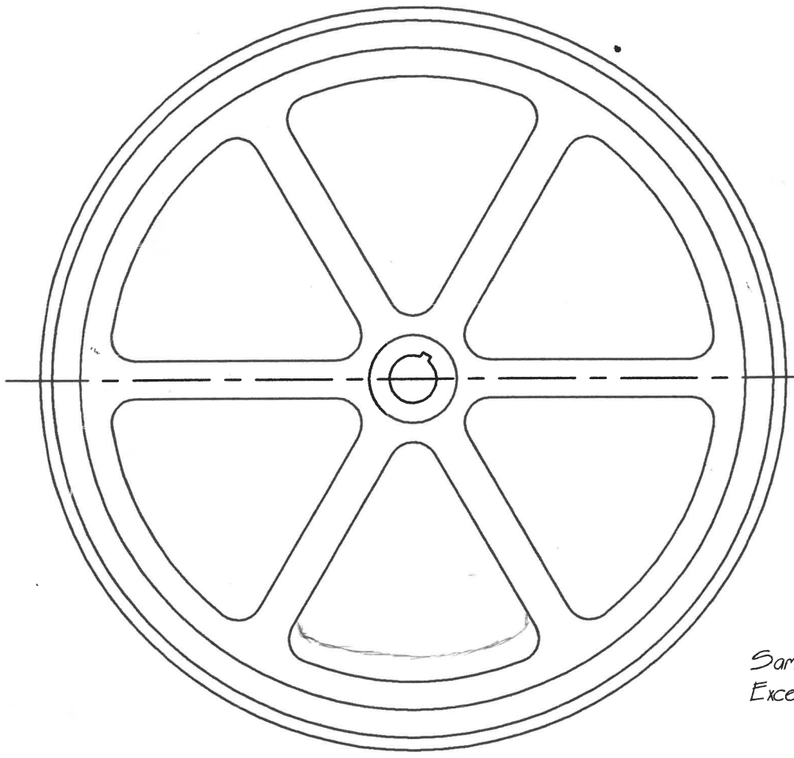
Left Side Elevation

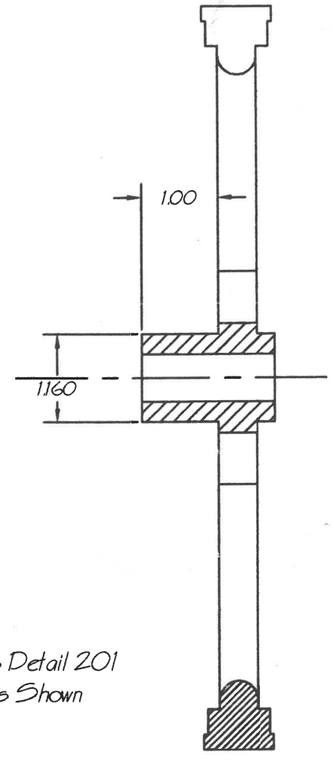
SHEET: 3 of 24 | REV.

REV.	BY	DESCRIPTION OR ECO #	DATE



201 (1) REQ'D
Half Scale





Same as Detail 201
Except as Shown

202 (1) REQ'D
Half Scale

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	202	1	Flywheel (Casting # TS 129) Right Side	Cast Iron	
	201	1	Flywheel (Casting # TS 130) Left Side	Cast Iron	
200		2	Flywheel Castings		

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PL = Push Fit w/ Loctite
PJ = Push Fit
R = Running Fit
F = Force Fit
X = Machined Surface

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks - Moris Type N

DATE: 10/1/2005 | SCALE: HALF | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1-6±

DESCRIPTION
Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

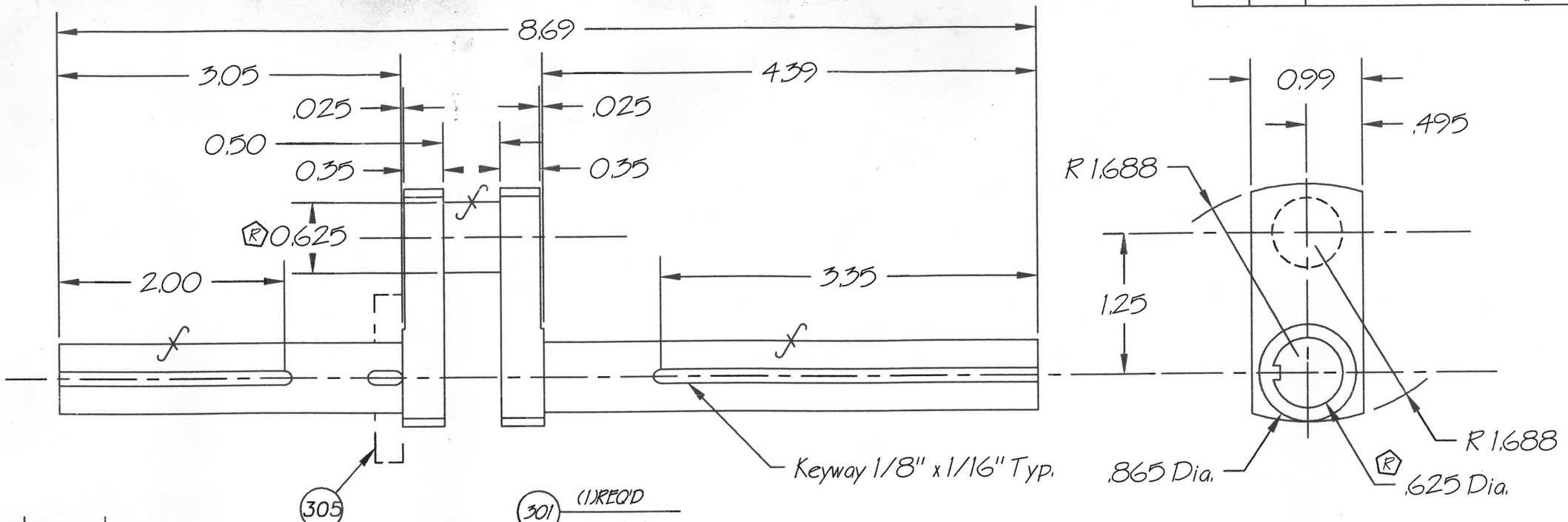
DRAWING NO.
FM-2

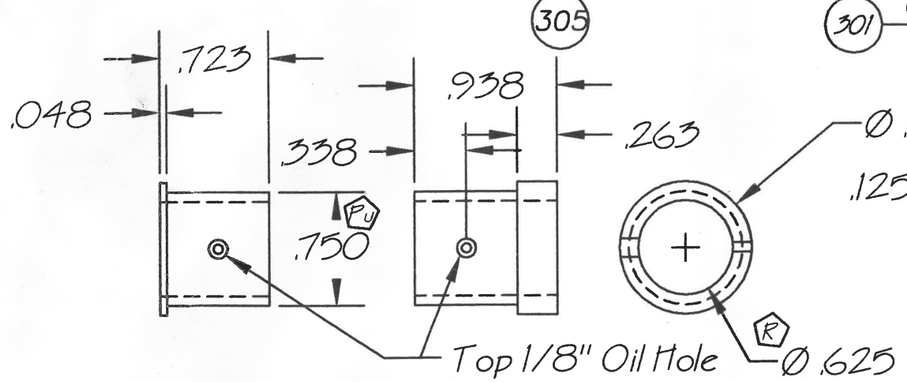
Flywheel Details

SHEET: 4 of 24

REV.

REV.	BY	DESCRIPTION OR ECO #	DATE

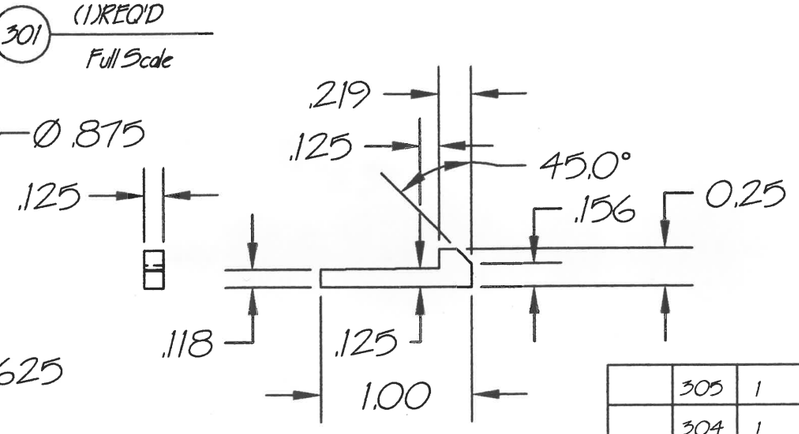




302 (1) REQ'D
Full Scale

303 (1) REQ'D
Full Scale

301 (1) REQ'D
Full Scale



Gib Key

304 (2) REQ'D
Full Scale

Taper Key .125" in 12"

	305	1	Spur Gear 30 Tooth 24 Pitch .250" Face	52430	Boston Gear
	304	1	Key .125 x .25 x 1" Lg.	Steel	
	303	1	Right Main Bearing .875 Dia. x .1" Lg.	Bronze	
	302	1	Left Main Bearing .875 Dia. x .75" Lg.	Bronze	
	301	1	Crank Shaft 1" x 1 1/4" x 9" Lg.	4140 Steel	
300		1	Crank Shaft & Main Bearing Details		
ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.

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(PL) = Push Fit w/ Loctite
(PU) = Push Fit
(R) = Running Fit
(F) = Force Fit
X = Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/1/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

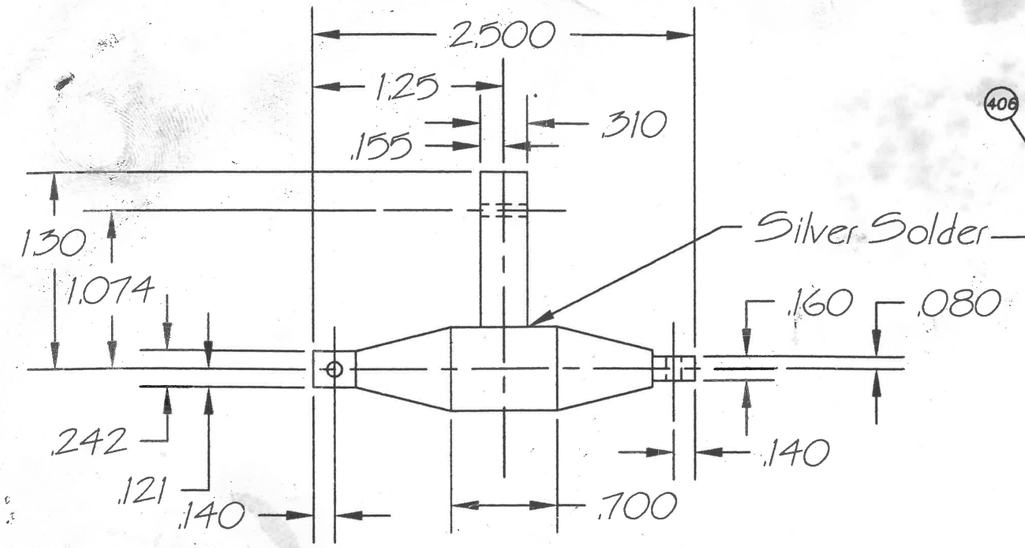
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE; Salem, OR 97306

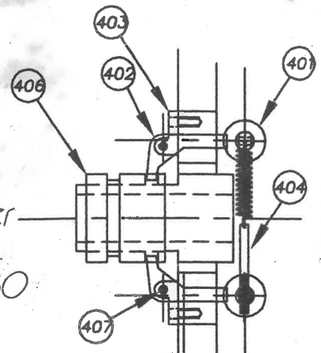
DRAWING NO. FM-3

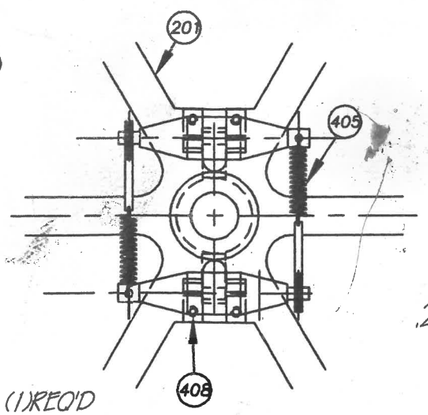
Crank Shaft & main Bearings

SHEET: 5 of 24 | REV.

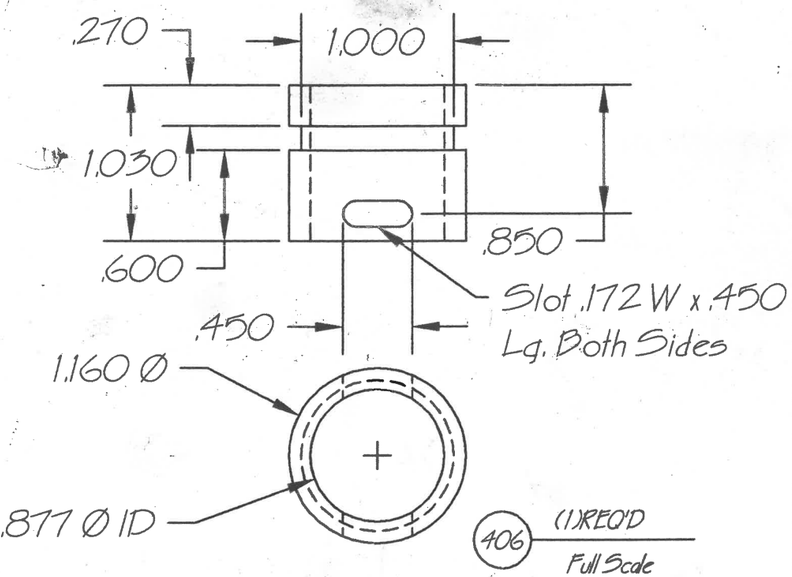
REV.	BY	DESCRIPTION OR ECO #	DATE



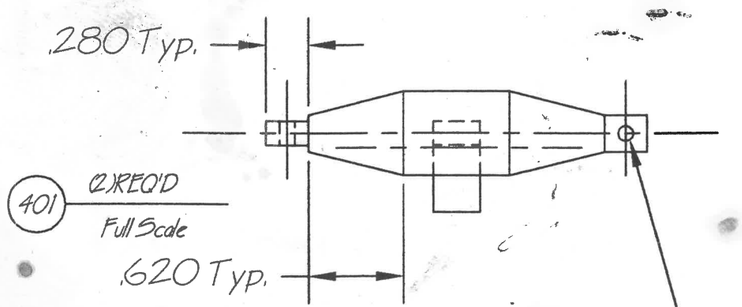




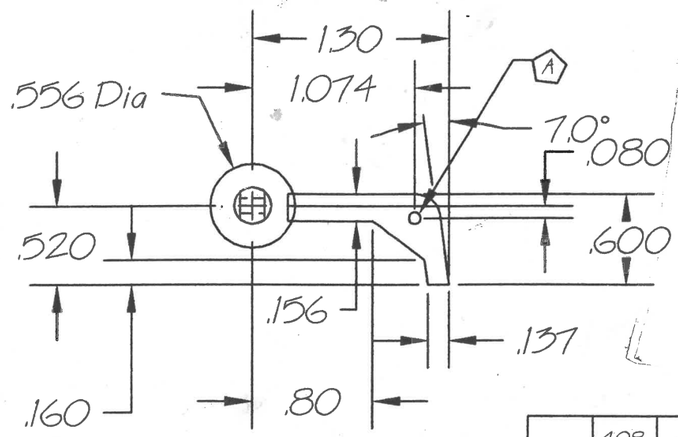
400 (1) REQ'D
Half Scale

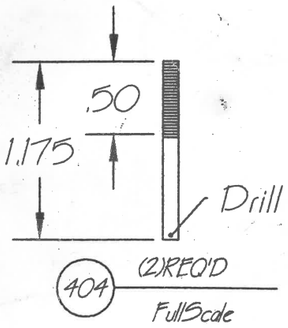


406 (1) REQ'D
Full Scale

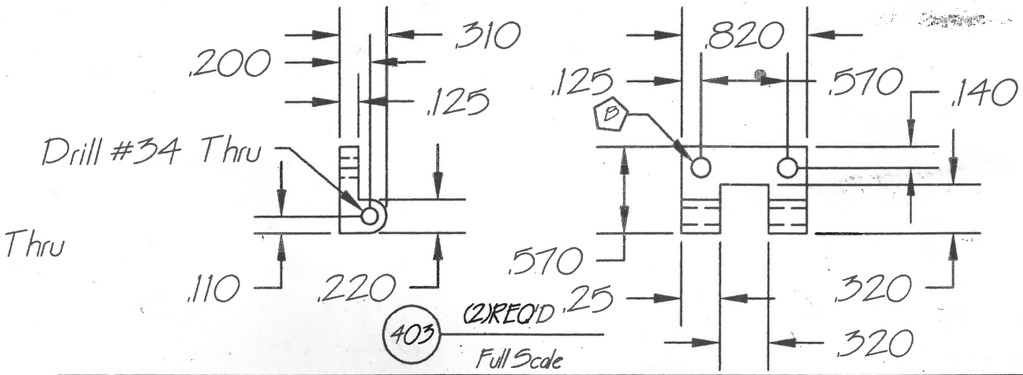


401 (2) REQ'D
Full Scale





404 (2) REQ'D
Full Scale



403 (2) REQ'D
Full Scale

	408	4	Ming Mount Bolt 4-40 x 3/8" Lg.	Steel	
	407	2	Ming Pin (Bolt) 4-40 x 1" Lg. w/ Nut	Steel	
	406	1	Govenor Slide 1.160 Dia. x 1.030 Lg.	CRMS	
	405	2	Springs .014" Dia. Wire Coil as Needed	CRMS	
	404	2	Adjustment Stud 3-48 thd x 1.175 Lg. w/ 2 Nuts	CRMS	
	403	2	Govenor Weight Ming .310 x .570 x .820 Lg.	CRMS	
	402	2	Govenor Weight Arm .310 x .600 x 1.06 Lg.	CRMS	
	401	2	Govenor Weight .556 Dia. x 2 1/2" Lg.	CRMS	
400		1	Govenor Assembly		
ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.

Notes:

(A) Drill 5/64" Dia. Hole for Ming Pin

(B) Drill #30 Typ.

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(PU) = Push Fit
(R) = Running Fit
(F) = Force Fit
= Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/1/2005	SCALE: FULL	DRN. BY: W. Austin	DESIGNER: Tom Stuart	Model Scale: 1/6±

DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE; Salem, OR 97306

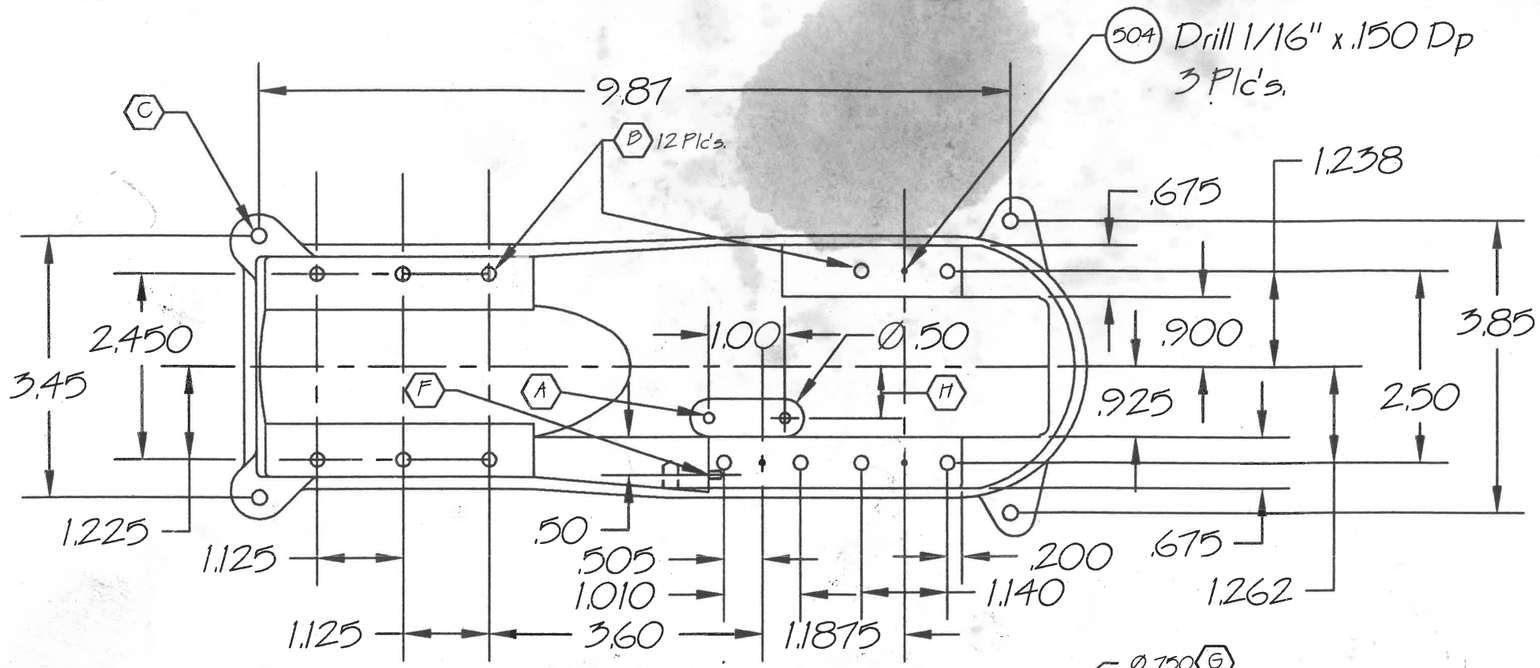
DRAWING NO. FM-4

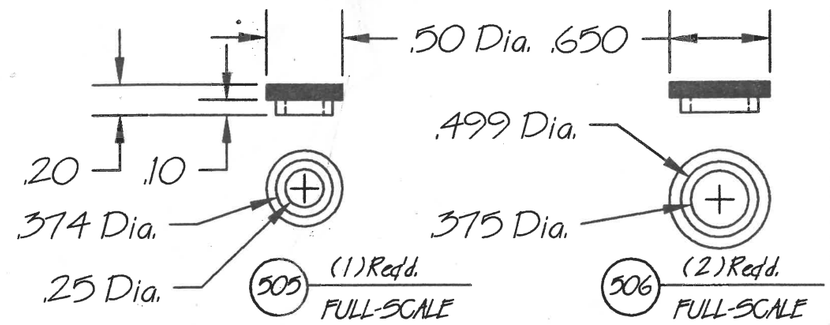
Govenor Assembly

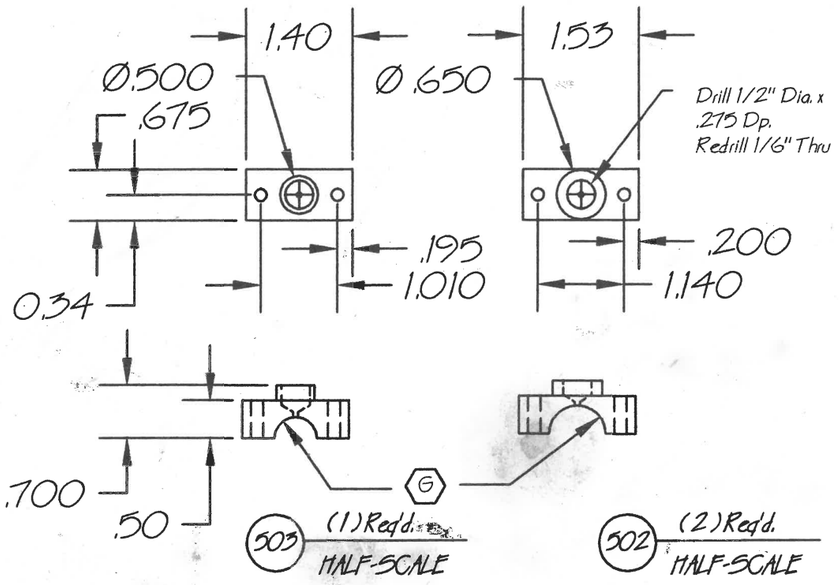
SHEET: 6 of 24

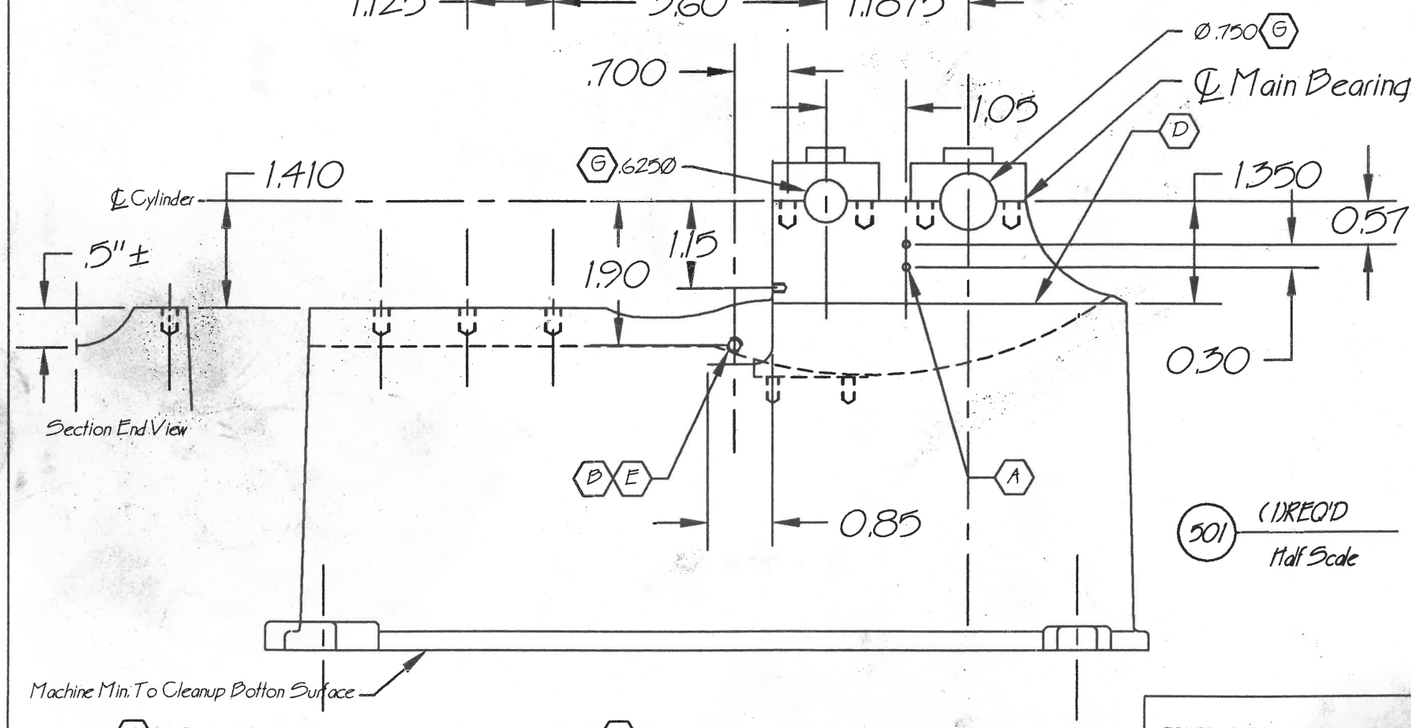
REV.

REV.	BY	DESCRIPTION OR ECO #	DATE









	506	2	Cam Shaft Bearing Oil Cap .500 Dia. x .200 Lg.	Brass	
	505	1	Main Bearing Oil Cap .650 Dia. x .200 Lg.	Brass	
	504	3	Round 1/16" Dia. x .200" Lg.	Music Wire	
	503	1	Cam Shaft Bearing Cap .700" x .675" x 1.400" Lg. Cast Iron	TS125	Stuart
	502	2	Main Bearing Cap .700" x .675 x 1.530" Lg. Cast Iron	TS125	Stuart
	501	1	Engine Base Casting	TS1215	Stuart
500		1	Engine Base Details	CRMS	
ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.

(A) Drill #38 x .300 Dp. Tap 5-40 2 Plc's.

(B) Drill #21 x .300 Dp. Tap 10-32

(C) Drill #9 Thru 4 Plc's.

(D) Machine Both sides of Gearing Standards To 1.350 Below Top & Bearing ℄.

(E) Machine Boss on Plane with Standard

(F) Drill #33 x .150 Dp. Tap 4-40

(G) Machine Crank & Cam Bearing Fits W/ Caps in Place And Bolted On Engine Base

(H) Ref. Dim. .672" Confirm at assembly

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/2/2005 | SCALE: HALF | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

DESCRIPTION

Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

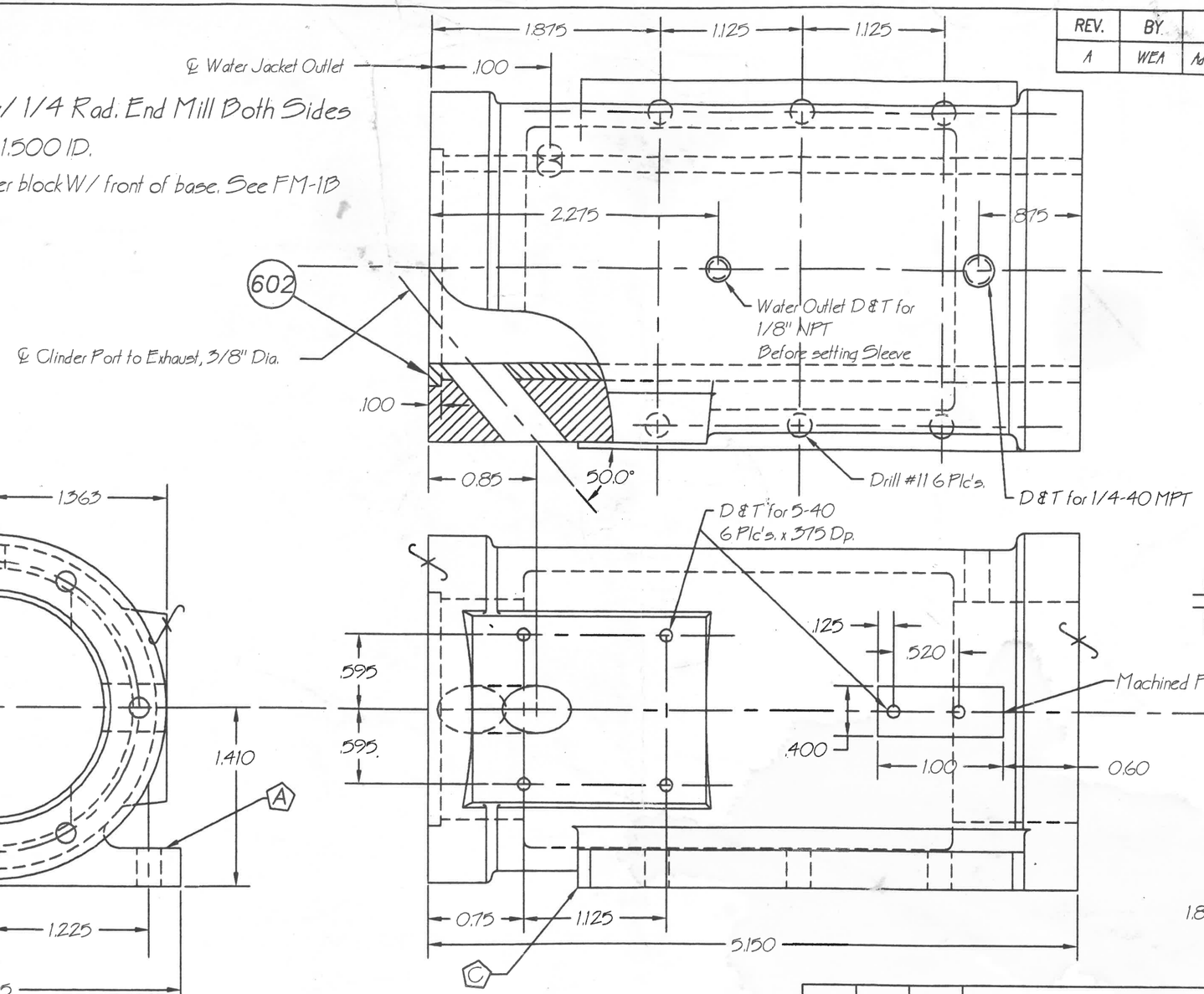
DRAWING NO. FM-5

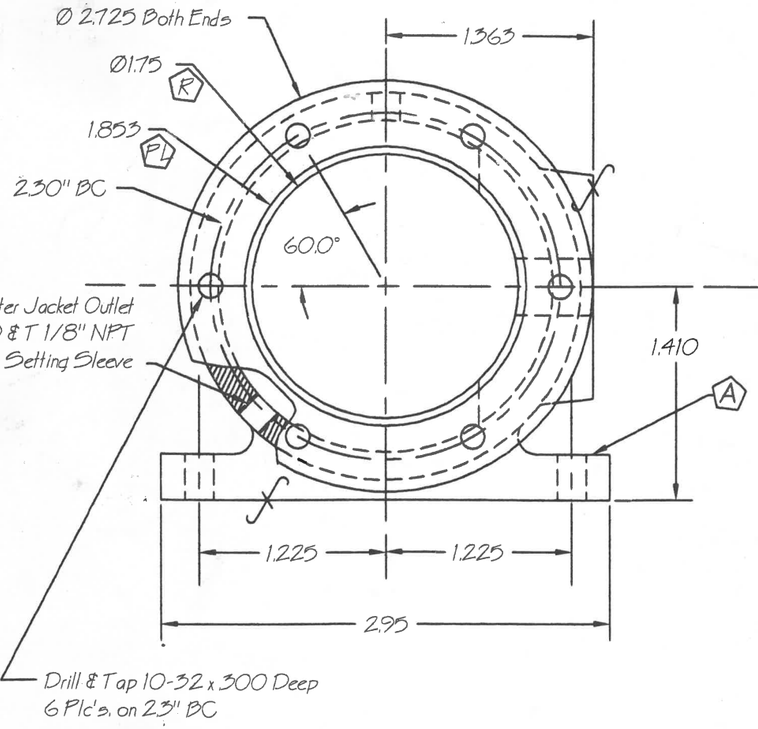
Engine Base

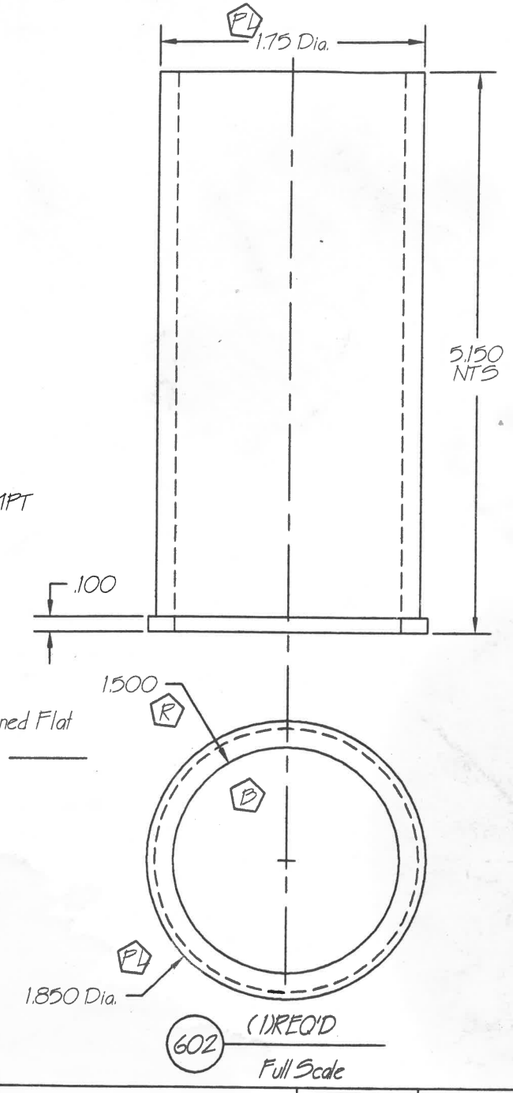
SHEET: 7 of 24 | REV.

REV.	BY	DESCRIPTION OR ECO #	DATE
A	WEA	Added Location of cyl. block to base	8/14/2006

NOTE: (A) Machine Flat Surface w/ 1/4 Rad. End Mill Both Sides
(B) Machine to 1.496 Hone to 1.500 ID.
(C) Locate front edge of cylinder block W/ front of base. See FM-1B







ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	602	1	Cylinder Sleeve	TS128	Stuart
	601	1	Cylinder Housing	TS122	Stuart
600		1	Cylinder Housing Details		

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PU = Push Fit
R = Running Fit
F = Force Fit
∫ = Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 11/9/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

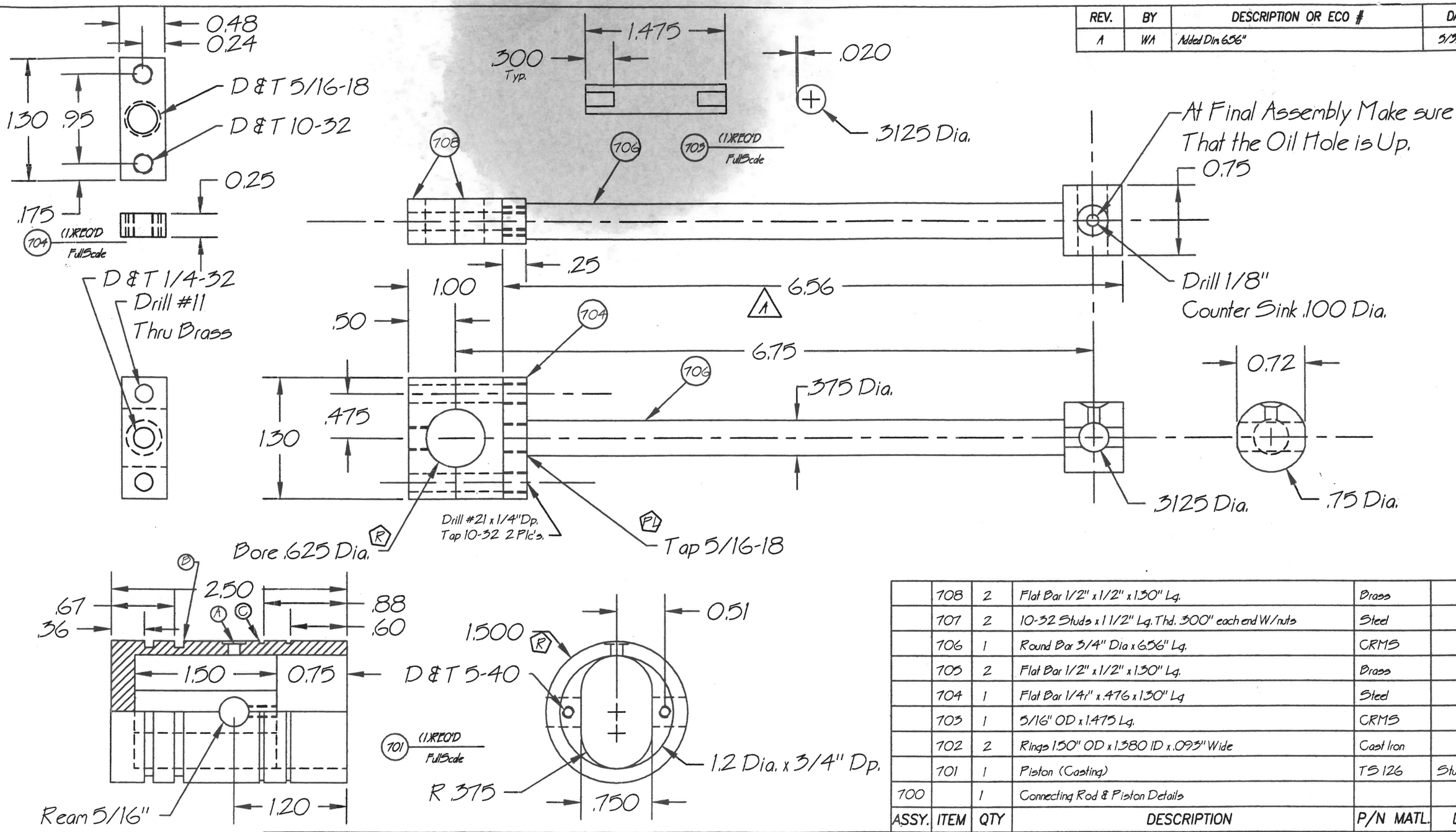
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-6

Cylinder Block Assembly

SHEET: 8 of 24 | REV.

REV.	BY	DESCRIPTION OR ECO #	DATE
A	WA	Added Dim 6.56"	5/3/2006



	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	708	2	Flat Bar 1/2" x 1/2" x 1.30" Lg.	Brass	
	707	2	10-32 Studs x 1 1/2" Lg. Thd. .300" each end W/nuts	Steel	
	706	1	Round Bar 3/4" Dia x 6.56" Lg.	CRMS	
	705	2	Flat Bar 1/2" x 1/2" x 1.30" Lg.	Brass	
	704	1	Flat Bar 1/4" x .476 x 1.30" Lg	Steel	
	703	1	5/16" OD x 1.475 Lg.	CRMS	
	702	2	Rings 1.50" OD x 1.380 ID x .093" Wide	Cast Iron	
	701	1	Piston (Casting)	TS 126	Stuart
700		1	Connecting Rod & Piston Details		

(A) Wrist Pin Oil Hole Drill 1/8" CB 1/4" x .025 Dp.
(B) Ring Groove .094 Wide x .070 Dp.
(C) Oil Groove .050 Wide x .025 Dp.
(D) Rings 1.50" OD x 1.380 ID x .093" Wide

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Pu = Push Fit
R = Running Fit
F = Force Fit
= Machined Surface

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/13/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE; Salem, OR 97306

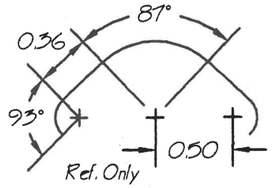
DRAWING NO. FM-7

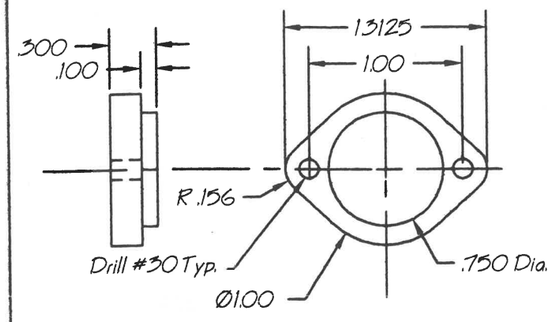
Connecting Rod & Piston

SHEET: 9 of 24 | REV. A

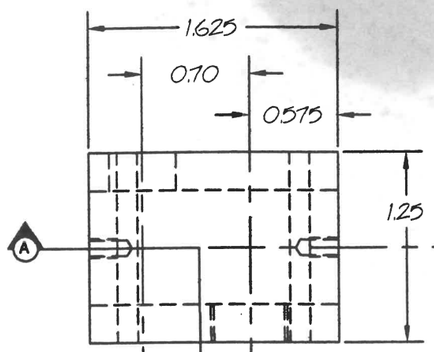
REV.	BY	DESCRIPTION OR ECO #	DATE

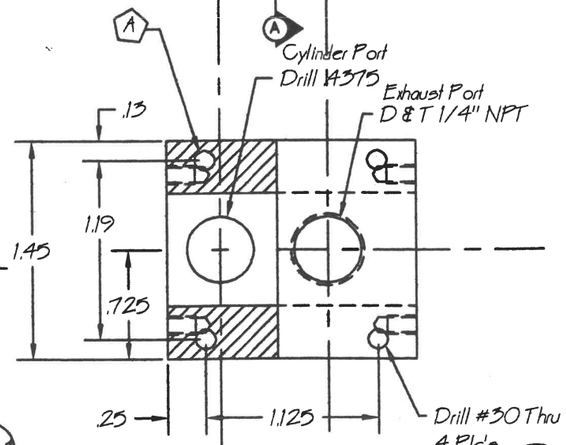
Stud Schedule: (A) 4 ea. 4-40 x 1.625 Lg.
(B) 4 ea. 5-40 x .500 Lg.



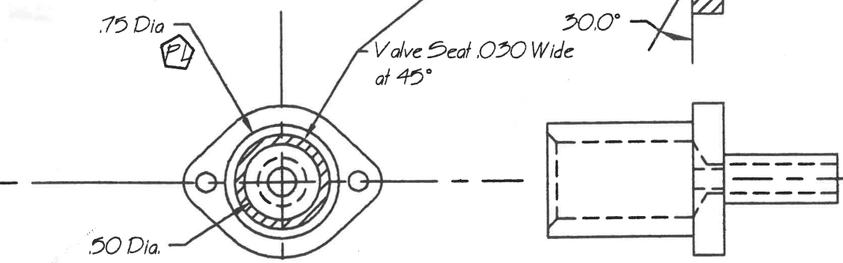


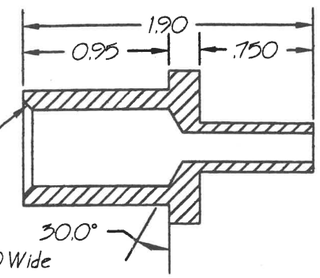
803 (1) REQ'D
Full Scale

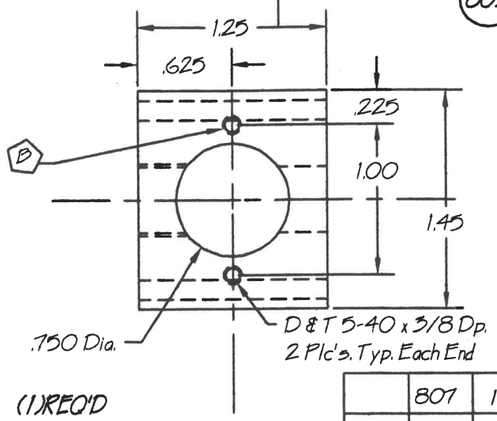


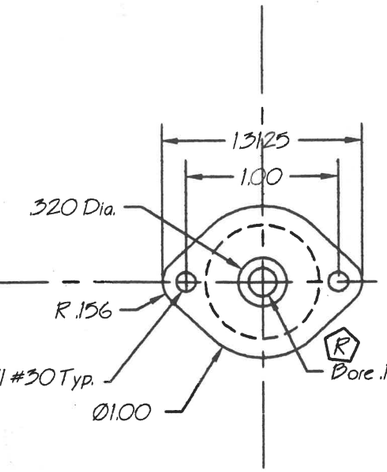


SECTION A A
Full Scale









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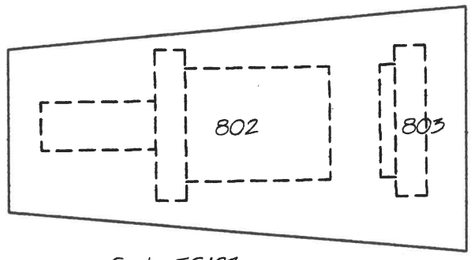
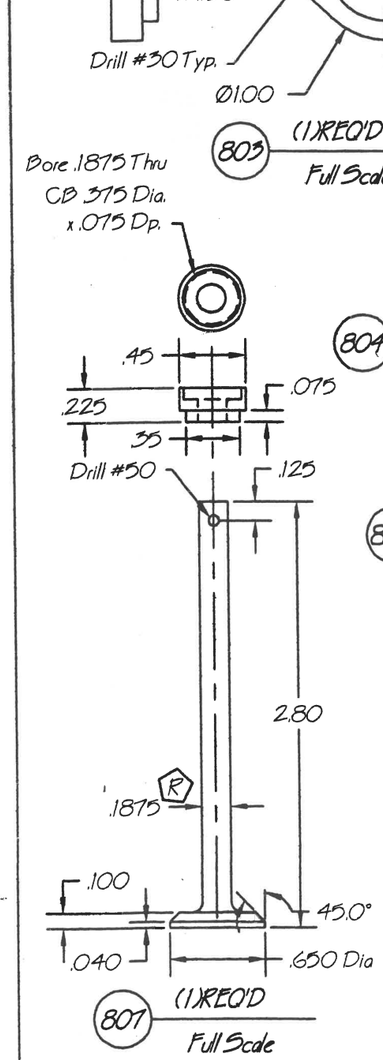
Full Scale

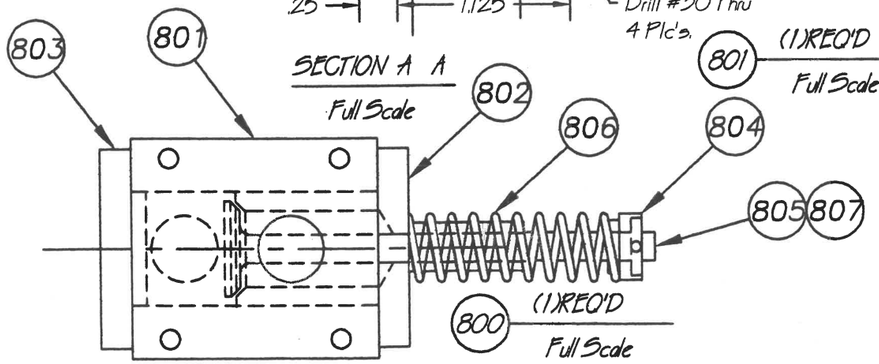


Casting TS127



807 (1) REQ'D
Full Scale

804 (1) REQ'D
Full Scale



801 (1) REQ'D
Full Scale

800 (1) REQ'D
Full Scale

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
800		1	Exhaust Chamber Assembly		
	801	1	Exhaust Chamber Housing	TS124	Stuart
	802	1	Exhaust Valve Guide 1.25 x 1 x 1.90 Lg.	TS127	Stuart
	803	1	Exhaust Valve Guide Cap 1.25 x 1 x .300 Lg.	TS127	Stuart
	804	1	Exhaust Valve Keeper .475 Dia. x .225 Lg.	Steel	
	805	1	Exhaust Valve Keeper Pin .0625 Dia. x .360 Lg.	Steel	
	806	1	Exhaust Valve Spring .02 Dia. Wire x 3/8 ID x 1.5" Lg. Free Length	Steel	
	807	1	Exhaust Valve .650 Dia. x 2.80 Lg.	Stainless Steel	

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(PL) = Push Fit w/ Loctite
(PU) = Push Fit
(R) = Running Fit
(F) = Force Fit

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/2/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

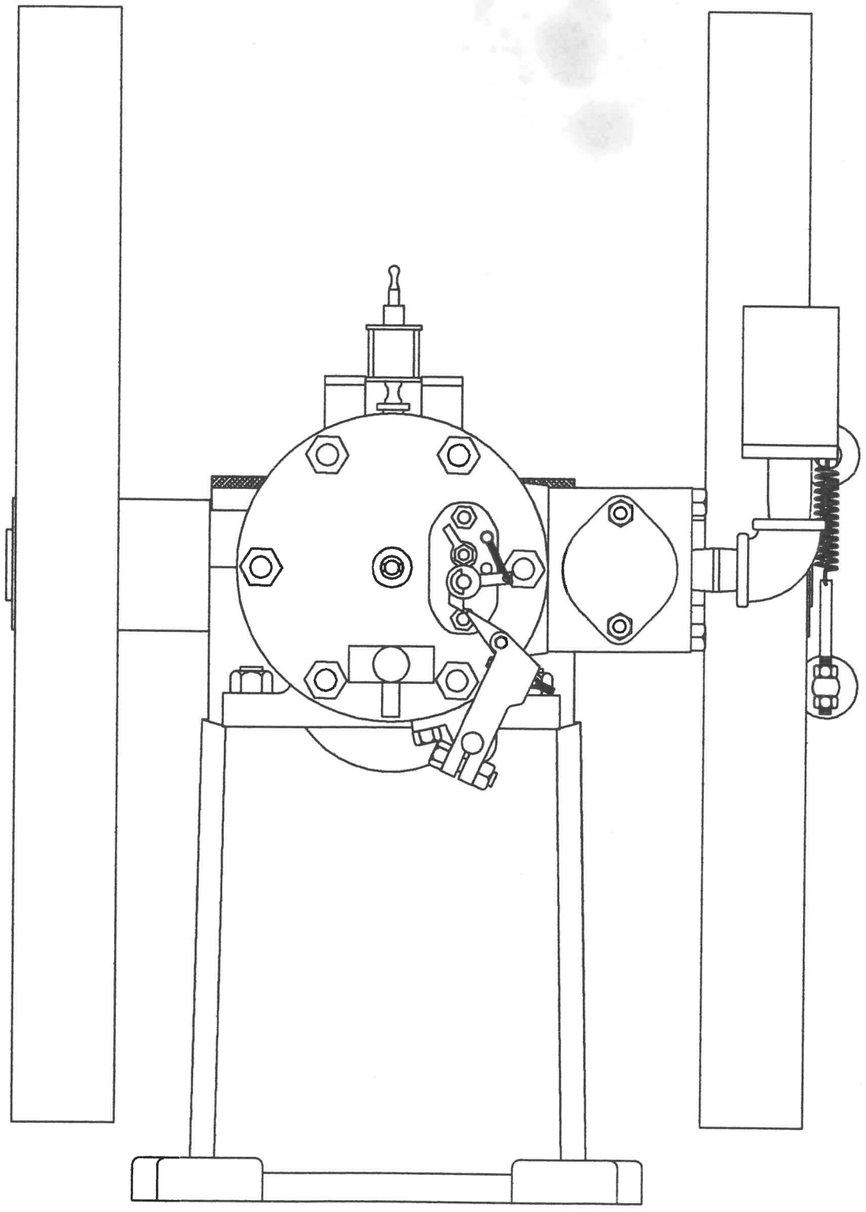
DESCRIPTION
Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO.
FM-8

Exhaust Chamber Assembly

SHEET: 10 of 24 | REV.

REV.	BY	DESCRIPTION OR ECO #	DATE



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PL = Push Fit w/ Loctite
PJ = Push Fit
R = Running Fit
F = Force Fit
√ = Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/2/2005	SCALE: FULL	DRN. BY: W. Austin	DESIGNER: Tom Stuart	Model Scale: 1/6±

DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

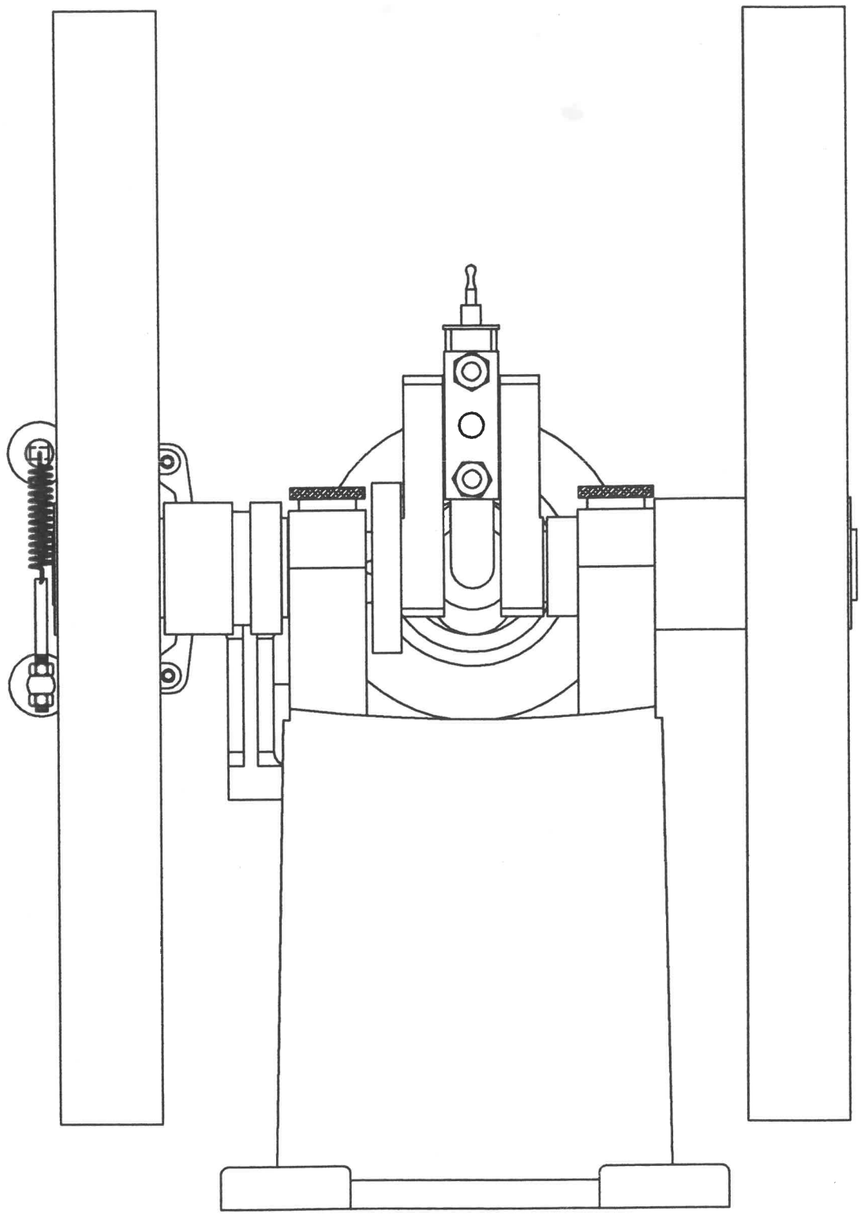
DRAWING NO. FM-9

Front End Elevation

SHEET: 11 of 24

REV.

REV.	BY	DESCRIPTION OR ECO #	DATE



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PU = Push Fit
R = Running Fit
F = Force Fit
√ = Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/17/2005	SCALE: 3/4"=1"	DRN. BY: W. Austin	DESIGNER: Tom Stuart	Model Scale: 1/6±

DESCRIPTION
Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

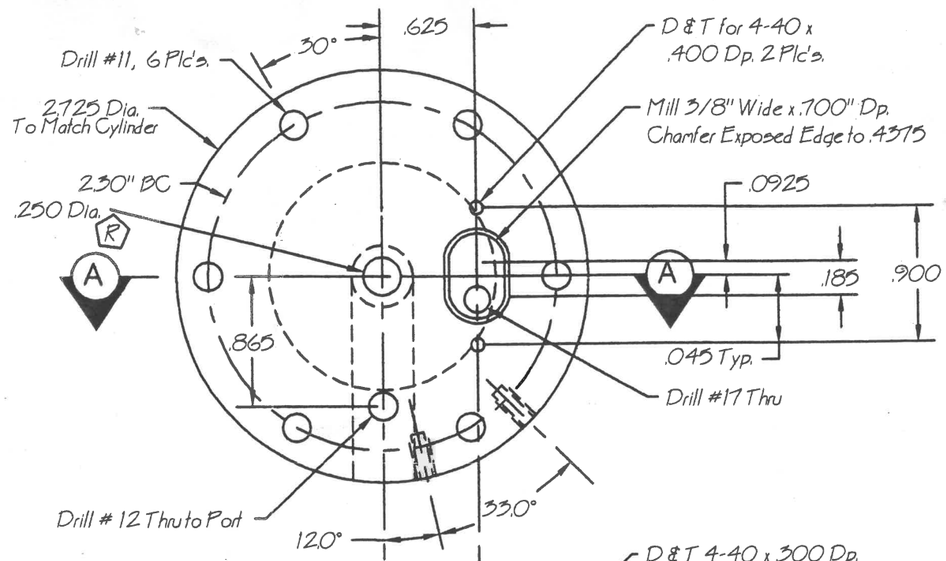
DRAWING NO.
FM-9A

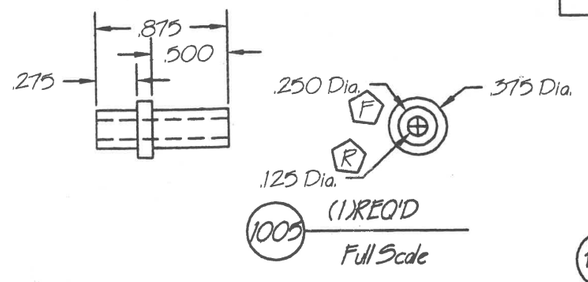
Rear Elevation

SHEET: 12 of 24

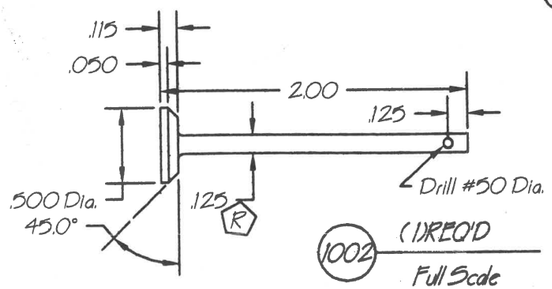
REV.

REV.	BY	DESCRIPTION OR ECO #	DATE
A	WA	Up Date Valve Port Dim.	5/3/2006

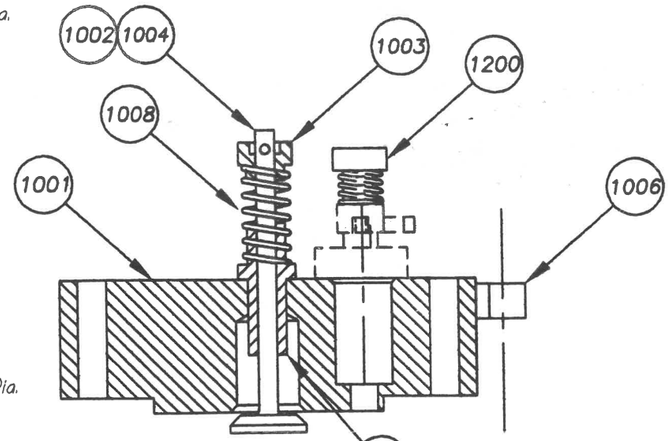




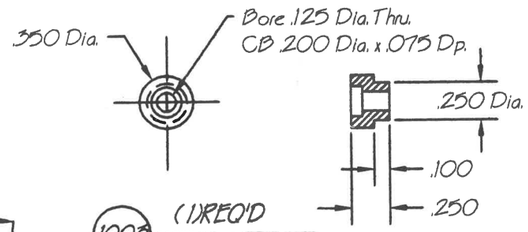
1005 (1) REQ'D
Full Scale



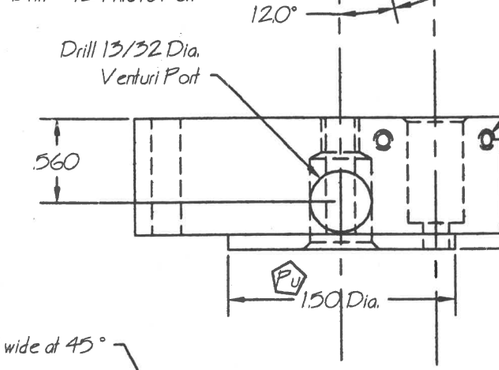
1002 (1) REQ'D
Full Scale

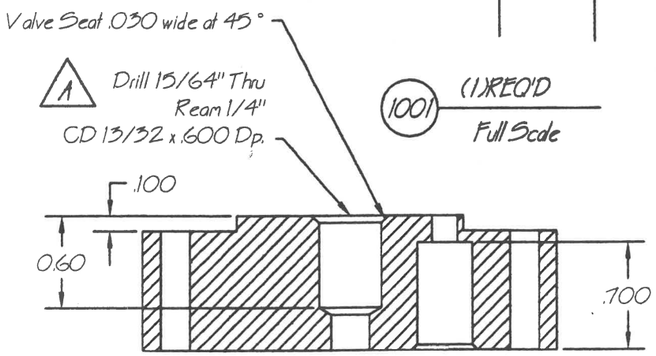


1000 (1) REQ'D
Assembly



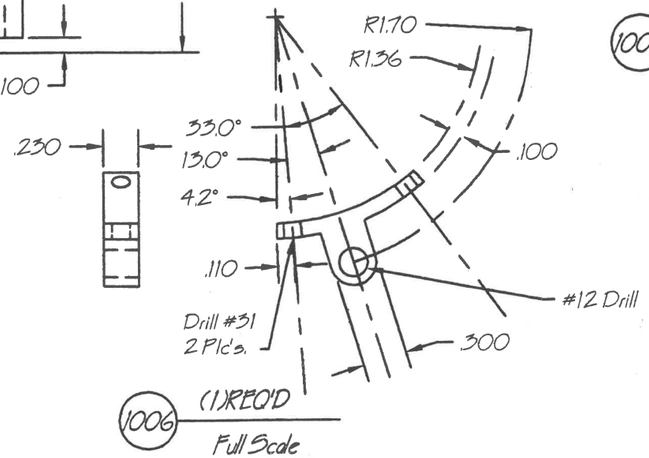
1003 (1) REQ'D
Full Scale





1001 (1) REQ'D
Full Scale

SECTION A-A
Full Scale



1006 (1) REQ'D
Full Scale

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1008	1	Intake Valve Spring 5/16" ID x 2" Free Length	steel	
	1007	6	Cylinder Head Studs 10-32 x 1.25" Lg. Thd. each end 1/4"	steel	
	1006	1	Ignitor Rocket Shaft Mount .230 Wide x .625 High x 1" Lg.	Brass	
	1005	1	Intake Valve Guide .0375" Dia. x .875" Lg.	Brass	
	1004	1	Intake Valve Keeper Pin .0625" Dia. x .190" Lg.	Steel	
	1003	1	Intake Valve Keeper .350" Dia. x 2.50" Lg.	Steel	
	1002	1	Intake Valve .500" Dia. x 2.00" Lg.	Stainless Steel	
	1001	1	Cylinder Head Casting	TS123	Stuart
1000		1	Cylinder Head Assembly		

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R = Running Fit
F = Force Fit
= Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/2/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

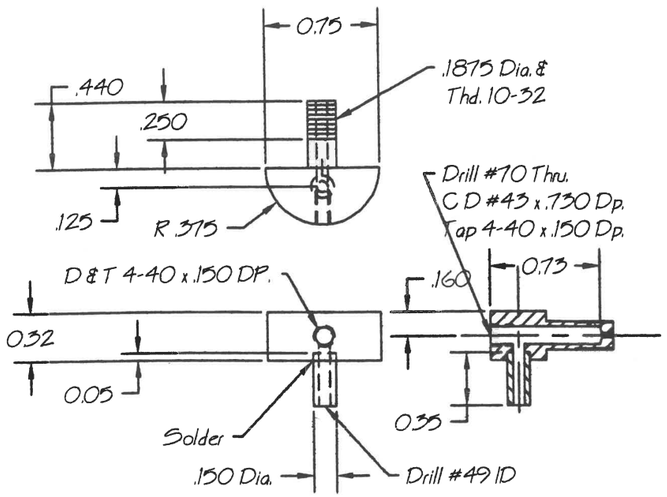
DESCRIPTION
Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-10

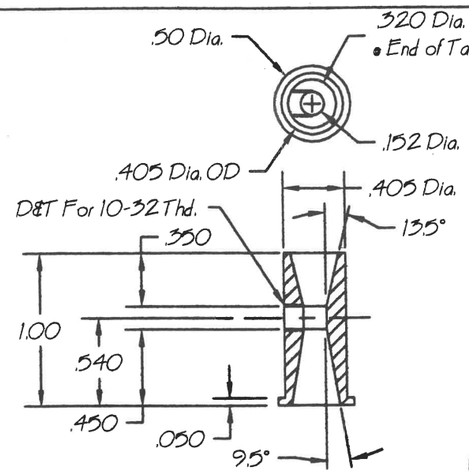
Cylinder Head Assembly

SHEET: 13 of 24 | REV. A

REV.	BY	DESCRIPTION OR ECO #	DATE
A	WA	Add .060" Dim.	5/3/2006

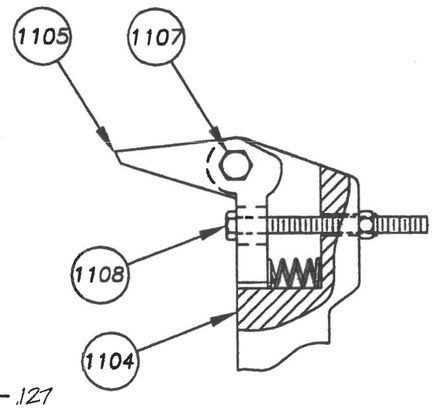


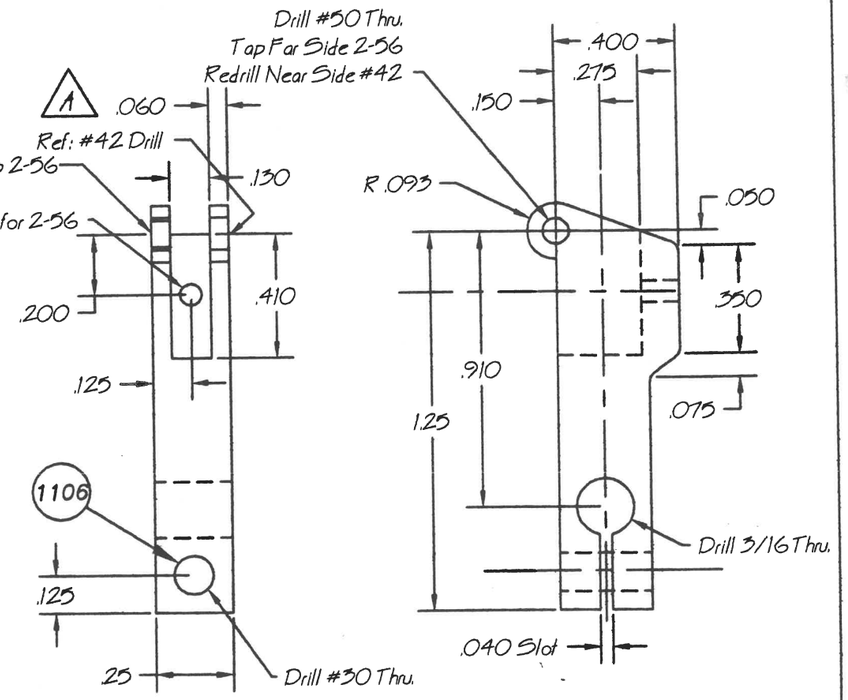
1101 (1)REQ'D Full



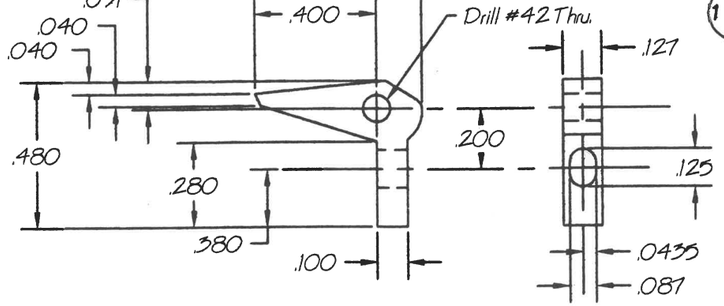
Full Section

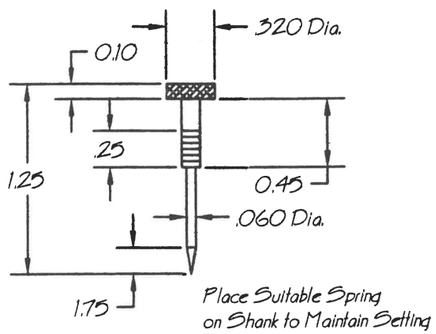
1103 (1)REQ'D Full Scale





1104 (1)REQ'D Scale 2X





1102 (1)REQ'D Full

Note: Harden After Machining

1105 (1)REQ'D Scale 2X

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1108	1	Bolt 2-56 x 5/8" Lg. w/Lock Nut	Steel	
	1107	1	Bolt 2-56 x 1/4" Lg.	Steel	
	1106	1	Bolt 5-40 x 1/2" Lg. /w Nut	Steel	
	1105	1	Rocker Arm Trigger .127 x .400 x .550 LG.	Drill Rod	
	1104	1	Rocker Arm 1/4" x 1/2" x 1 3/8" LG.	CRMS	
	1103	1	Venturi .50" Dia. x 1" Lg	Brass	
	1102	1	Fule Metering Needle .320 Dia. x 1.05 Lg.	Brass	
	1101	1	Carburetor Housing	Brass	
1100		1	Carburetor Assembly		

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PJ = Push Fit
R = Running Fit
F = Force Fit
= Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/2/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

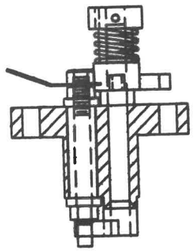
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

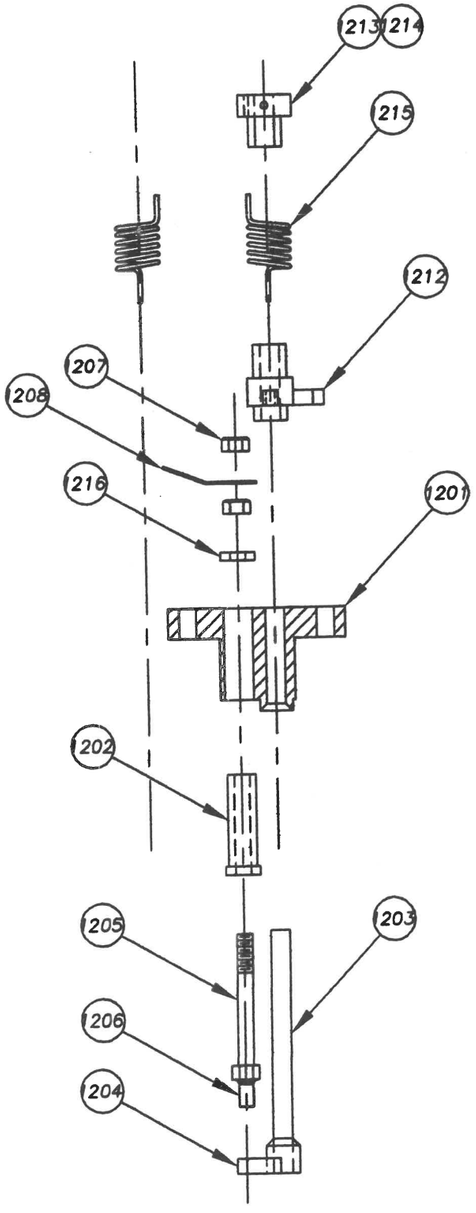
DRAWING NO. FM-11

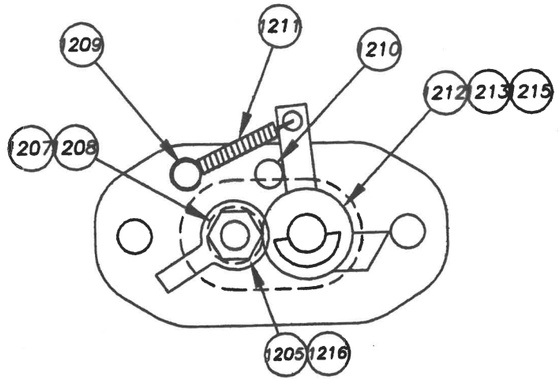
Carburetor & Ignitor Rocker Arm

SHEET: 14 of 24 | REV. A

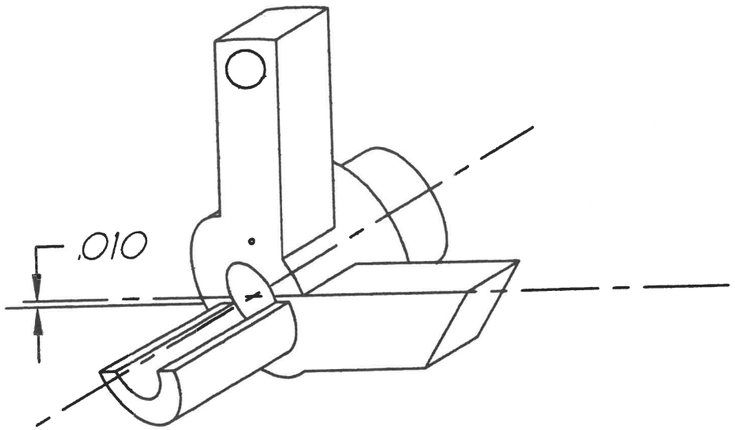
REV.	BY	DESCRIPTION OR ECO #	DATE





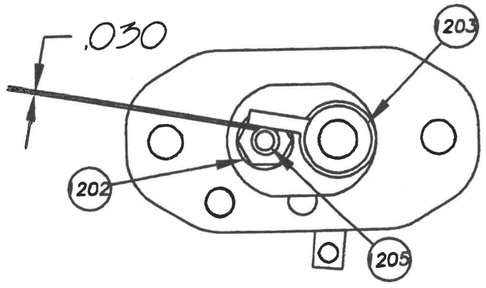


1200 (1) REQ'D
Ignitor Assembly
Scale: 2X



1212 ISO VIEW
Ignitor Hammer

Note: 1. A Spring (1211) Is Req'd To Hook Into 1/16" Hole on Hammer, To Spring Anchor Stud.
2. Another Spring (1215) Fits Around Hammer-Anvil Mating Surface With Ends Bent and Fit Into #65 Hole.
3. Rap Spring 1215 so it will Expand as Part 1212 is Rotated.
4. Gap Between Electrode Contact Surfaces Should Be .030" When Assembly is Complete.



Bottom View
Scale: 2X

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1216	1	Insulator Washer .225 Dia. x .062 Lg.	Teflon	
	1215	1	Hammer Spring .026 Wire x 1/4" ID x 9 wraps	Spring Steel	
	1214	1	Anvil Set Screw 4-40 x .125" Lg.	Steel	
	1213	1	Ignitor Anvil 3/8" Dia. x 3/8" Lg. Heat Treat after Machining	Drill Rod	
	1212	1	Ignitor Hammer 7/8" Dia. x .501 Lg. Heat Treat after Machining	Drill Rod	
	1211	1	Hammer Return Spring .010 Wire x 300" Lg. (Eye to Eye)	Spring Steel	
	1210	1	Hammer Stop Stud 4-40 x 300" Lg. (Same as 1209 W/O Grove)	CRMS	
	1209	1	Spring Anchor Stud 4/40 x 300" Lg.	CRMS	
	1208	1	Electrical Terminal .040" x 1/4" x 3/8"	Brass	
	1207	2	Hex Nut 3-48	Steel	
	1206	1	Fixed Electrode Contacter 1/16" Dia. x .175" Lg.	Tungsten	
	1205	1	Fixed Electrode Body 3-48 Hex Bolt x .937" Lg.	Steel	
	1204	1	Moveable Electrode contacter 1/16" Dia. x .190" Lg.	Tungsten	
	1203	1	Moveable Electrode Body 1/4" Dia x 1 5/8" Lg.	CRMS	
	1202	1	Ignitor Bushing .225 Dia x .660" Lg.	Teflon	
	1201	1	Ignitor Housing 3/4" x 5/8" x 1 3/16"	CRMS	
1200		1	Ignitor Assembly		

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TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/29/04 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

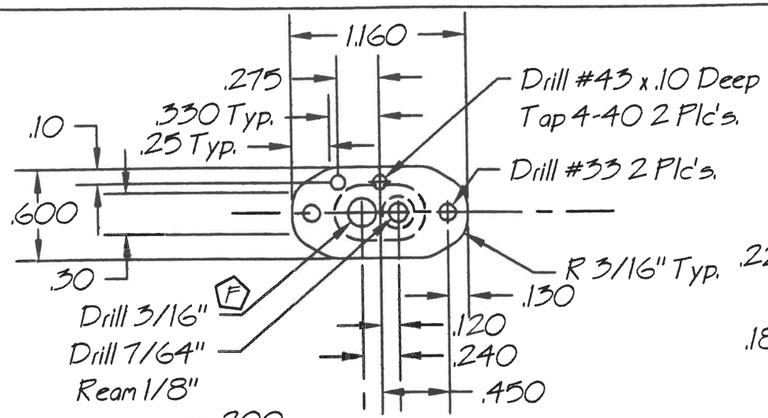
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE; Salem, OR 97306

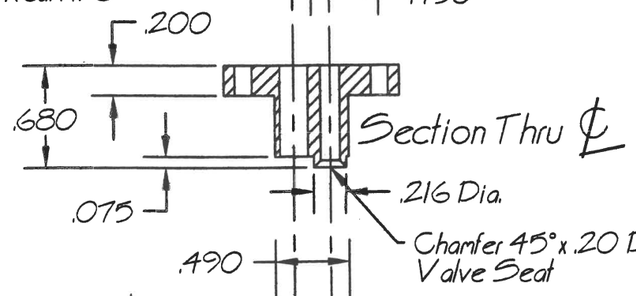
DRAWING NO. FM-12

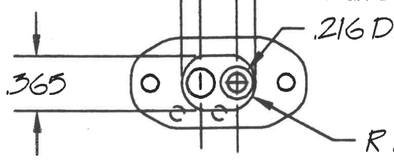
Ignitor Assembly

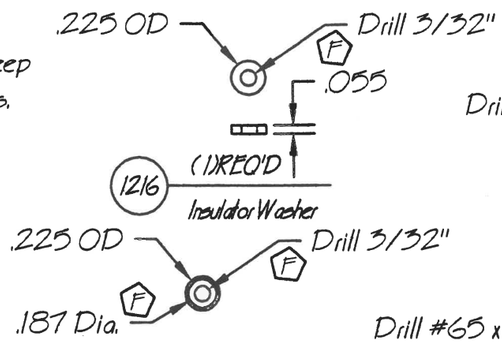
SHEET: 15 of 24 | REV.

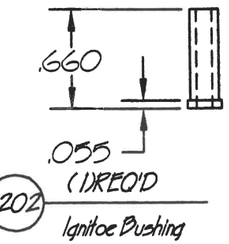
REV.	BY	DESCRIPTION OR ECO #	DATE
A	WA	General Updates	5/3/2006

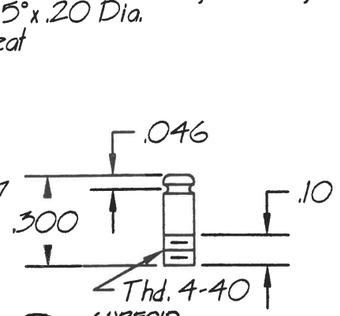


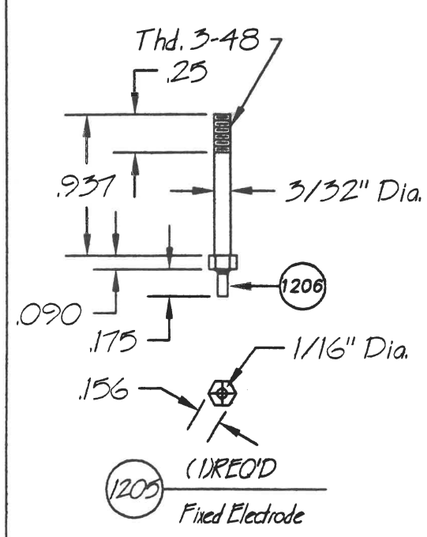


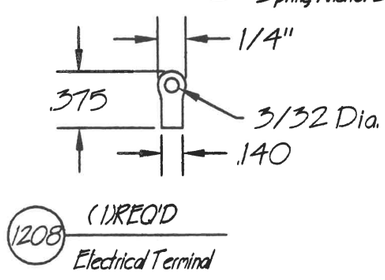


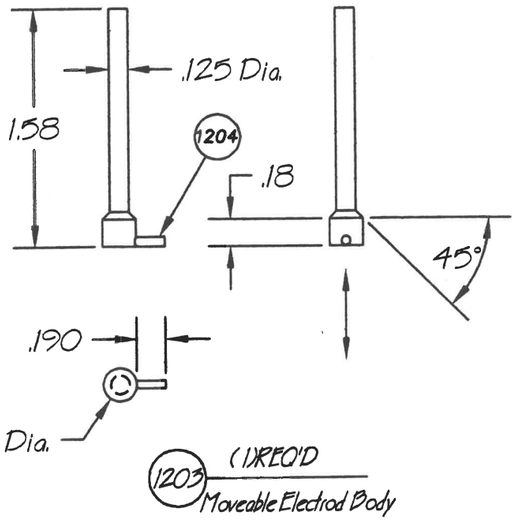


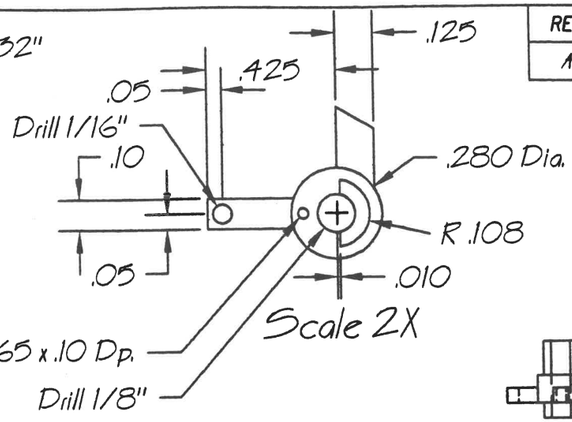


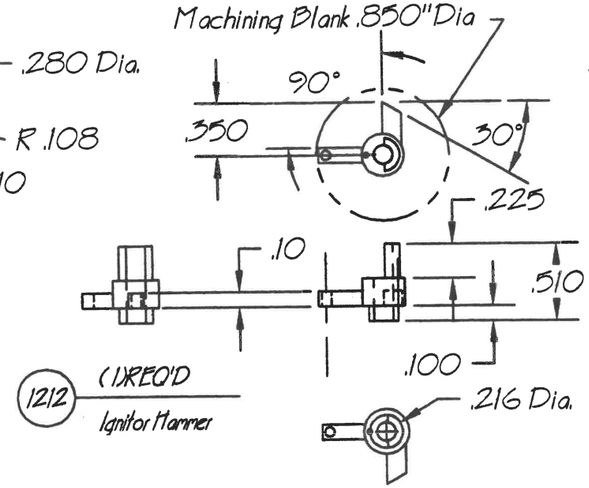


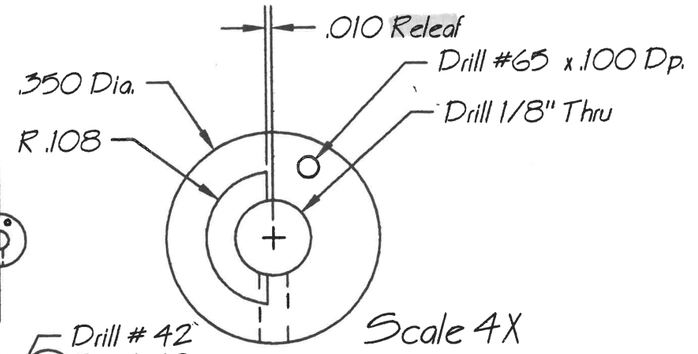


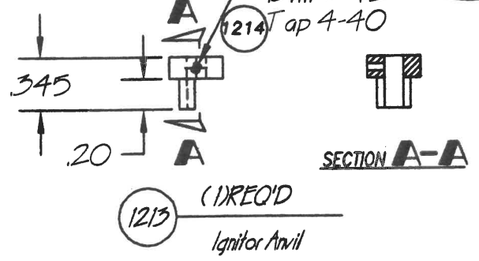












PL = Push Fit w/ Loctite
P = Push Fit
R = Running Fit
F = Force Fit
= Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/29/04 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

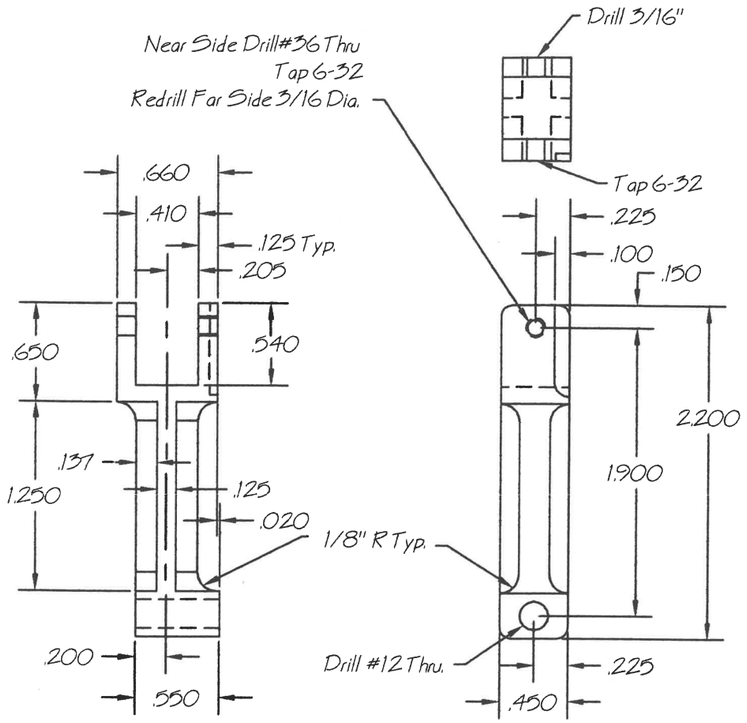
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE; Salem, OR 97306

DRAWING NO. FM-12A

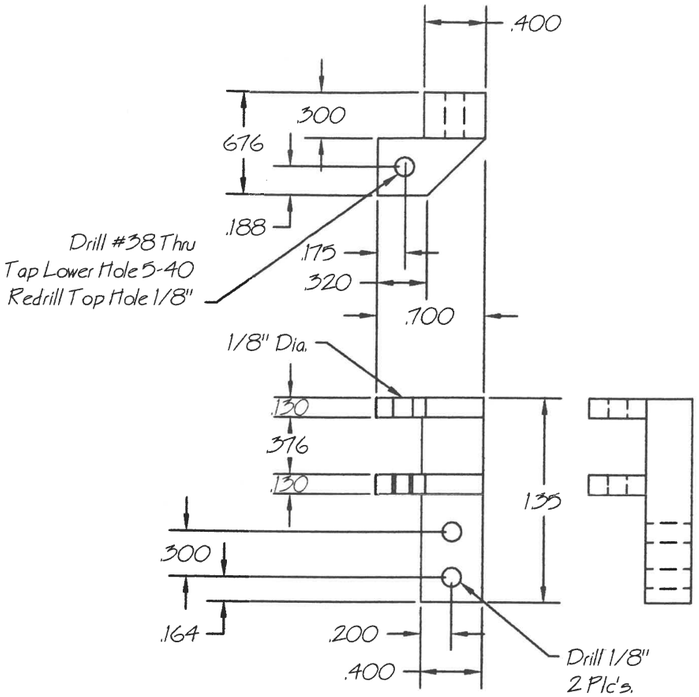
Ignitor Details

SHEET: 16 of 24 | REV. A

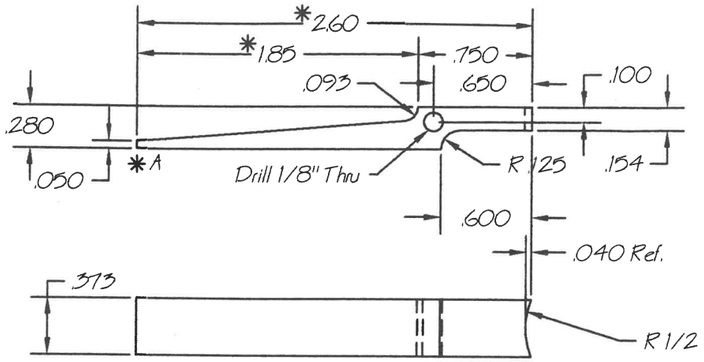
REV.	BY	DESCRIPTION OR ECO #	DATE



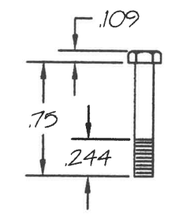
1301 (1)REQ'D Full Scale



1305 (1)REQ'D Full Scale



1307 (1)REQ'D Full Scale



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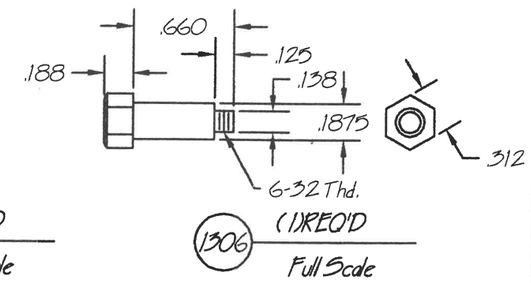

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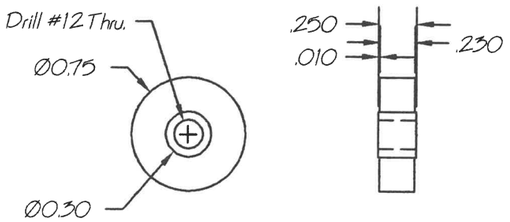

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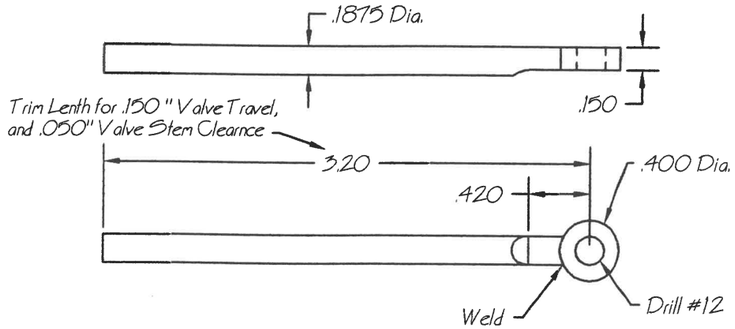

1302 1303 (1)REQ'D Full Scale

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1308	1	Shoulder Bolt 5/16" Hex x .847" OAL	Steel	12L14
	1307	1	Detent Arm .280 x .373 x 1.2.60 Lg.	CRMS	
	1306	1	Detent Hing Bolt 5-40 x .750 Lg.	Steel	12L14
	1305	1	Detent Hinge .676 x .700 x 1.350 Lg.	CRMS	
	1304	1	Cam Roller .750 x .250 Lg.	CRMS	
	1303	1	Exhaust Valve Pushrod End .400 OD x .189 ID x .150 Lg.	CRMS	
	1302	1	Exhaust Valve Pushrod 3/16" Dia. x 3" Lg.	CRMS	
	1301	1	Pushrod Povit Arm .450 x .660 x 2.200 Lg.	CRMS	
1300		1	Pushrod Povit Arm Details		

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PL = Push Fit w/ Loctite
Pu = Push Fit
R = Running Fit
F = Force Fit
X = Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/2/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

DESCRIPTION

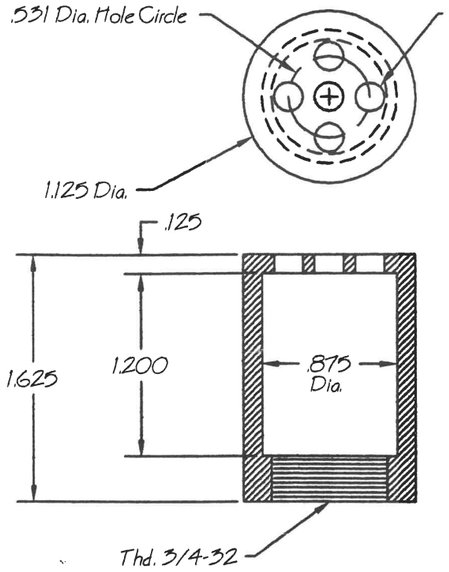
Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-13

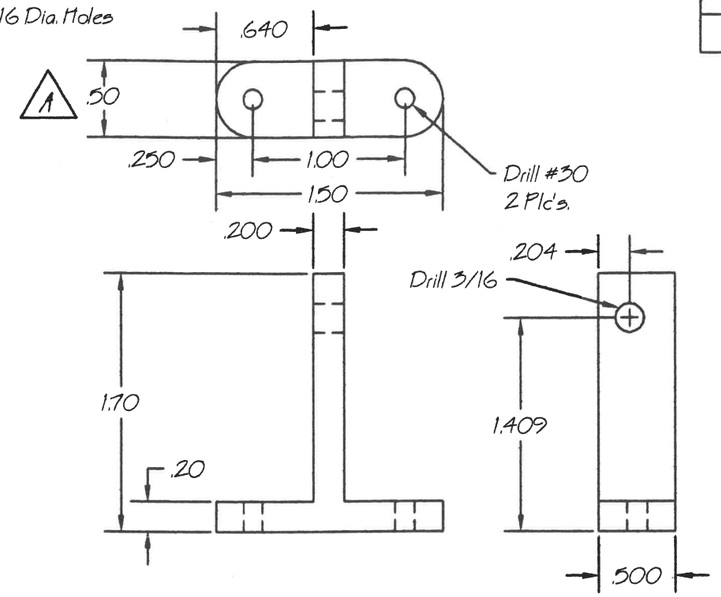
Pushrod Pivot Arm Assembly

SHEET: 17 of 24 | REV.

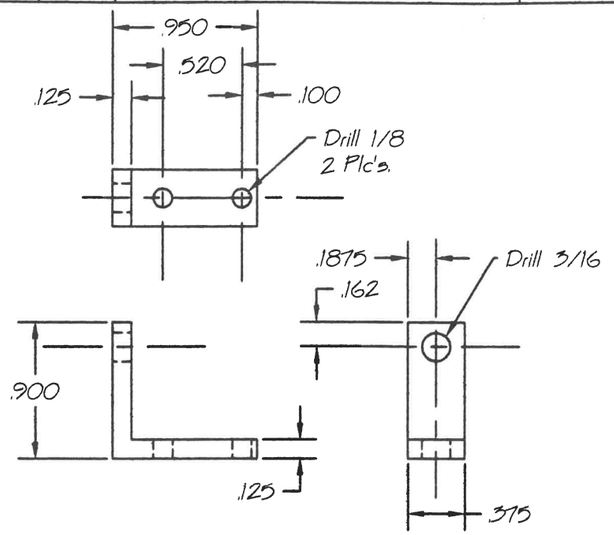
REV.	BY	DESCRIPTION OR ECO #	DATE
A	WA	Add 30 Dia.	3/3/2006



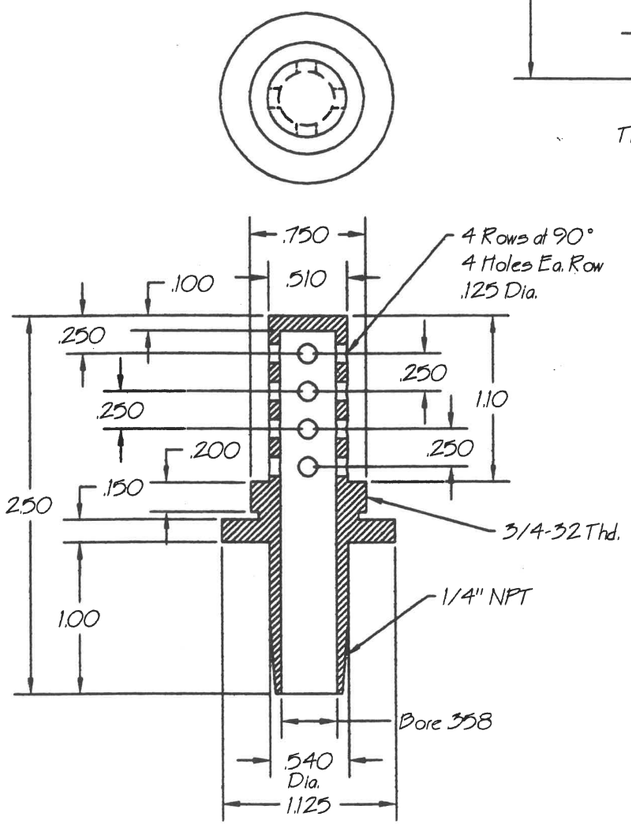
1404 (1) REQ'D
Full Scale



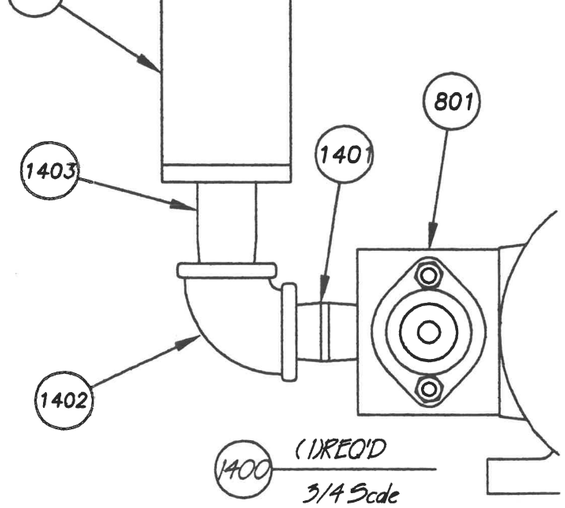
1406 (1) REQ'D
Full Scale



1407 (1) REQ'D
Full Scale



1403 (1) REQ'D
Full Scale



1400 (1) REQ'D
3/4 Scale

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1407	1	Pushrod Guide .125" Angle .900" x .950" x .375	Brass	
	1406	1	Ignitor Trip Arm Shaft Standard 1/2" x 1.50" x 1.70"	Brass	
1405		1	Misc. Support Brackets		
	1404	1	Muffler Upper Housing 1 1/8" Dia. x 1 5/8" Lg.	Brass	
	1403	1	Muffler Base 1 1/8" Dia. x 2 1/2" Lg.	Brass	
	1402	1	Elbow 1/4" NPT	Brass	
	1401	1	Close Nipple 1/4" NPT	Brass	
1400		1	Exhaust Assembly		

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PL = Push Fit w/ Loctite
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TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 10/2/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

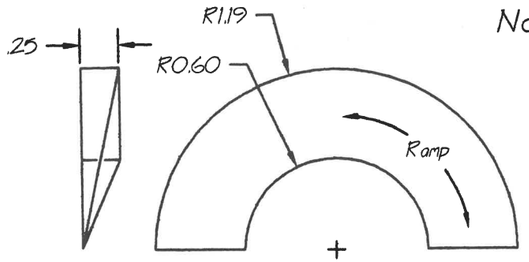
DRAWING NO. FM-14

Exhaust System Assembly

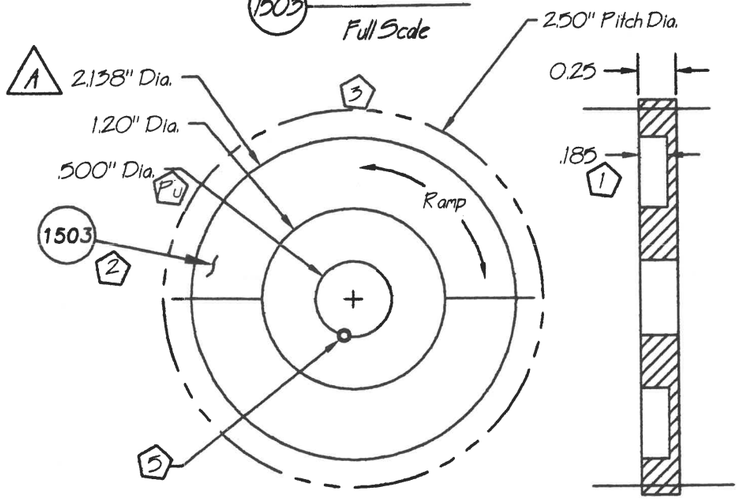
SHEET: 18 of 24 | REV. A

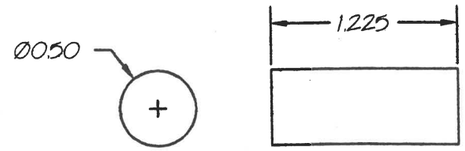
REV.	BY	DESCRIPTION OR ECO #	DATE
A	WA	Changed 2.38" to 2.138"	5/3/2006

Note:
1. Machine Gear 1501 to except cam 1503.
2. Soft Solder cam into Gear.
3. Top of cam will stick out of grar by approximatly .065".
4. Attach Spring Between Pin (1512) & and 4-40 Screw on Base.
5. After final Positioning of Cam (1511) & (Gear (1501) D&T for 8-32 Set Screw
6. Time Exhaust Valve To Be Closed at T.D.C

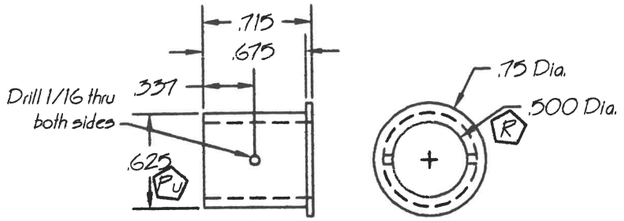


1503 (1)REQ'D Full Scale

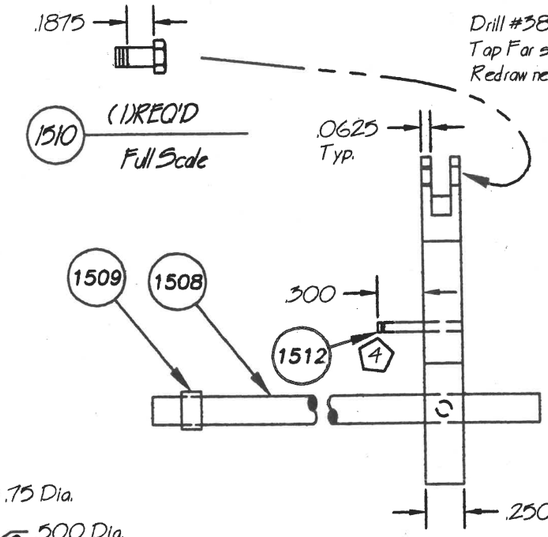




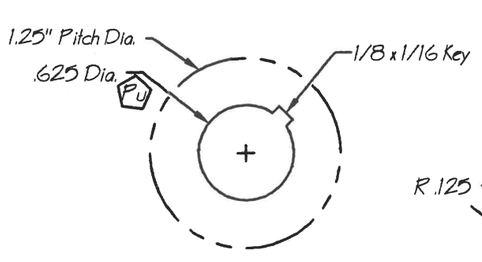
1504 (1)REQ'D Full Scale



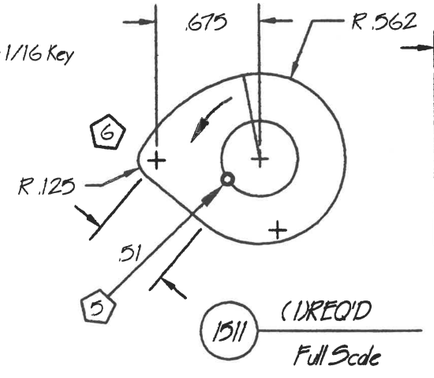
1505 (1)REQ'D Full Scale



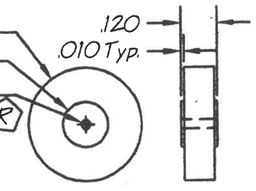
1506 (1)REQ'D Full Scale



1502 (1)REQ'D Full Scale



1511 (1)REQ'D Full Scale



1507 (1)REQ'D 2x Scale

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1512	1	Pin .0625 Dia. x .550 Lg.	Music Wire	
	1511	1	Exhaust Valve Cam 1/4" x 1 1/8" x 1 3/8" Lg.	CRMS	
	1510	1	Ignitor Trip Lever Arm Roller Bolt 5-40 x 1/4" Lg.	12L14	Steel
	1509	2	Transfer Rod Set Collers .250 Dia. x .1875" Lg. w/ Set Screw	Brass	
	1508	1	Ignitor Trip Lever Transfer Rod .1875 Dia.. x 9.50" Lg.	CRMS	
	1507	1	Ignitor Trip Lever Arm Roller .375" Dia. x .120" Lg.	Brass	
	1506	1	Ignitor Trip Lever Arm .250 x .550 x 2.166 Lg.	Brass	
	1505	1	Cam Shaft Bearing 3/4" Dia. x .715 Lg.	Brass	
	1504	1	Cam Shaft 1/2" Dia x 1.225	CRMS	
	1503	1	Ignitor Cam Supplied in Kit	Brass	
	1502	1	Timing Gear 30 Tooth, 24 Diametral Pitch, 14 1/2° PA	Boston Gear	S2430
	1501	1	Timing Gear 60 Tooth, 24 Diametral Pitch, 14 1/2° PA	Boston Gear	S2460
1500		1	Cam and Timing Gear Assembly		

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R = Running Fit
F = Force Fit
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TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/7/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

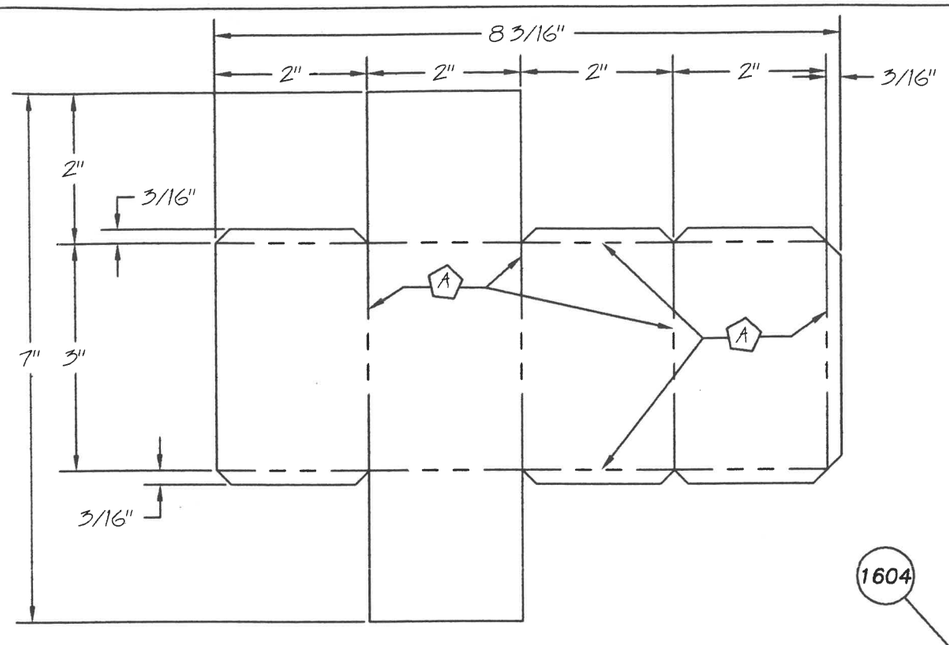
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-15

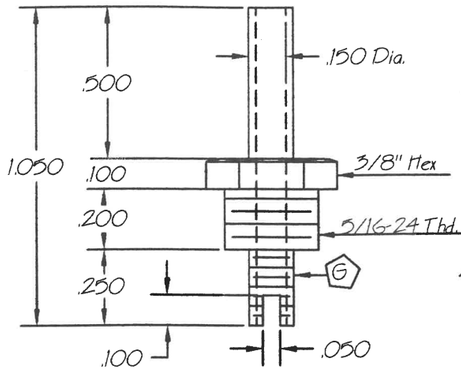
Cam & Timing Gear Details

SHEET: 19 of 24 | REV. A

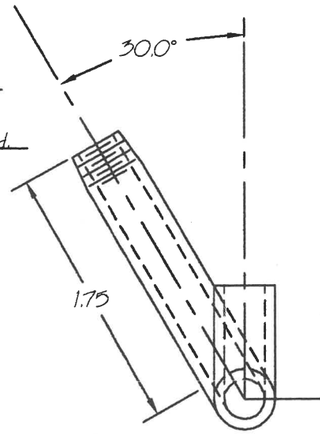
REV.	BY	DESCRIPTION OR ECO #	DATE



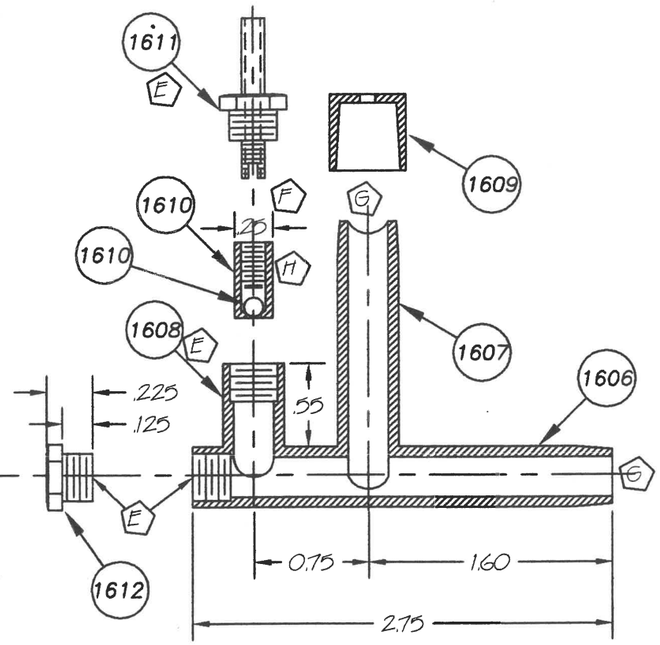
1601 (1) REQ'D
Half Scale

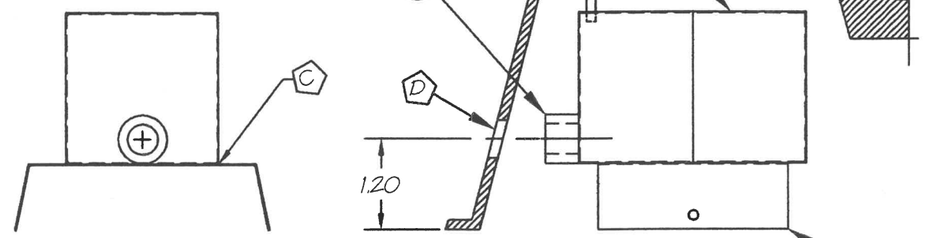


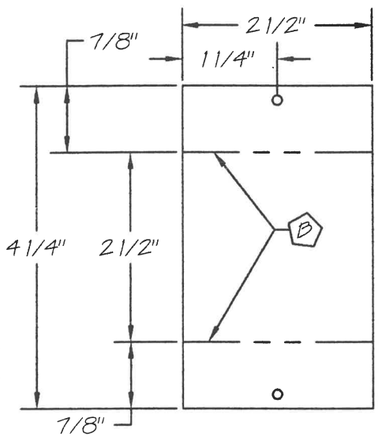
1611 (1) REQ'D
Scale 2X



1605 (1) REQ'D
Full Scale







1602 (1) REQ'D
Half Scale

A ℄ Bend Up 90° and Solder All Joints.

B ℄ Bend Up 90° Or To Match Engine Base.

C Center Base on Bottom of Tank and Solder.

D Drill 1/2" Hole in Base to Match Center of Gas Tank Outlet.

E Tap and or Thd. 5/16-24

F Foot Valve Assembly

G 1/8" NPT

H Thd. 10-32

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1612	1	Drain Plug 3/8" Hex x 2.25 Lg.	Brass	
	1611	1	Hose Bib 3/8" Hex x 1" Lg.	Brass	
	1610	1	Check Valve .250 Dia. x .550 Lg. W/ 1/8" Dia. Ball	Brass	
	1609	1	Pipe Cap 1/8" NPT 1/2" OD x 1/2" Lg.	Brass	
	1608	1	Pipe 1/8" Sch. 40 x 3/4" Lg.	Brass	
	1607	1	Pipe 1/8" Sch. 40 x 2" Lg.	Brass	
	1606	1	Tank Fill Pipe 1/8" Sch. 40 x 2 3/4" Lg.	Brass	
1605		1	Gas Fill and Foot Valve Assembly	Brass	
	1604	1	Tank Vent 1/8" Formed Tube	Brass	
	1603	1	1/8" NPT Half Coupling	Brass	
	1602	1	Tank Mount 24 Ga. 2 1/2" x 4 1/4" Sheet	Galv. Steel	
	1601	1	Gas Tank 24 Ga. 7" x 8" Sheet	Galv. Steel	
1600		1	Gas Tank Assembly		

THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF TOM STUART AND SHALL NOT BE REPRODUCED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.

PL = Push Fit w/ Loctite

P = Push Fit

R = Running Fit

F = Force Fit

√ = Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

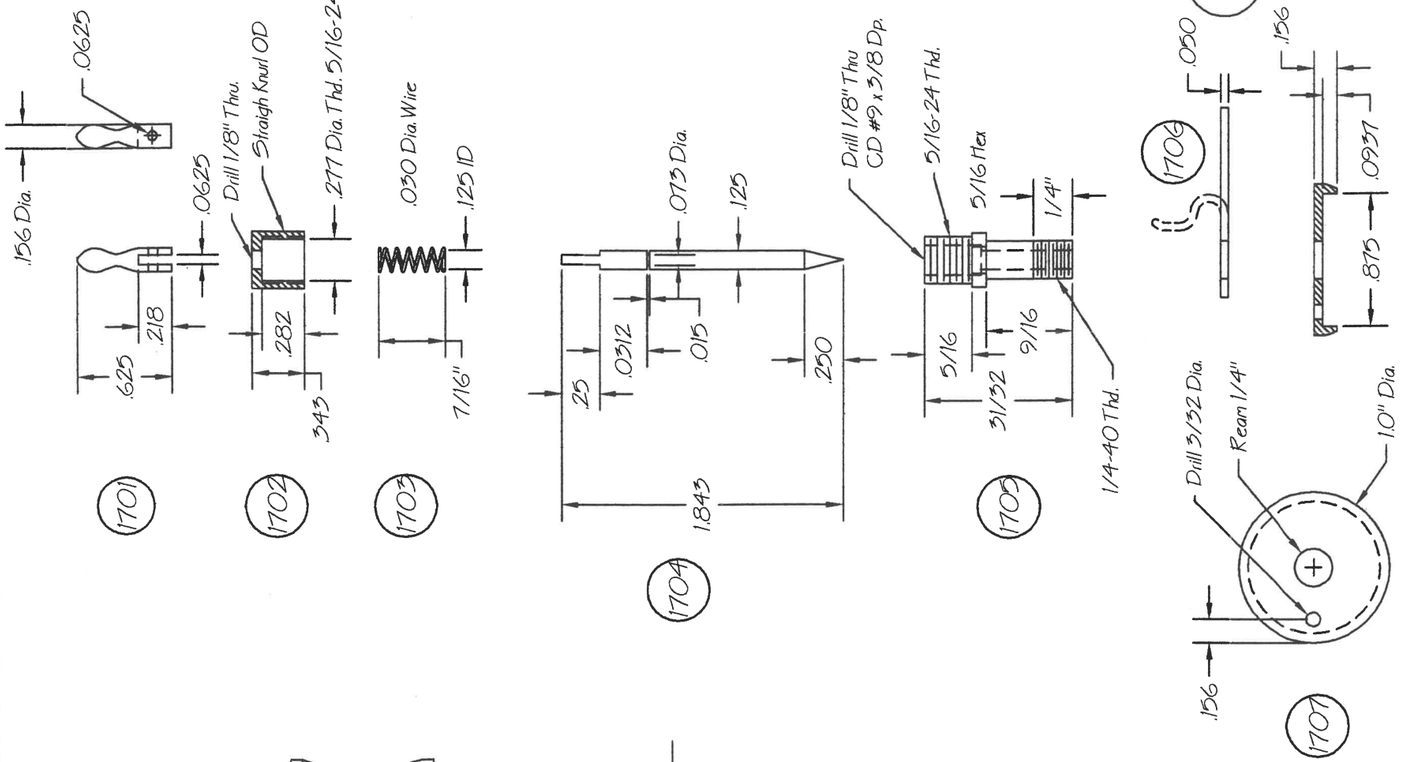
DATE: 12/8/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-16

Gas Tank & Foot Valve Details

SHEET: 20 of 24 | REV.



REV.	BY	DESCRIPTION OR ECO #	DATE

	1711	1	Metering Ball 1/8" Dia.	Brass or Stainless Steel	
	1710	1	Base Mount 3/8" Hex x 7/8" Lg.	Brass	
	1709	1	Site Glass Base 1" Dia. x 29/32" Lg	Brass	
	1708	1	Site Glass .875 OD x .750 ID x 13/16" Lg.	Plastic Tubing	
	1707	1	Site Glass Top 1" Dia. x 5/32" Lg.	Brass	
	1706	1	Tenchion Clip .050 Sheet x 1/2" x 1 1/4" Lg.	Brass	
	1705	1	Needel Guide 5/16 Hex x 31/32" Lg.	Brass	
	1704	1	Needel 1/8" Dia. x 1 27/32" Lg.	Brass	
	1703	1	Spring .030 Wire x 1/8" ID x 7/16" Lg.	Brass	
	1702	1	Spring Nut 3/8" Dia. x .343 Lg.	Brass	
	1701	1	Tenchion Knob 5/32 Dia. x 5/8 Lg.	Brass	
1700		1	Cylinder Oiler Assembly		
ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.

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PL = Push Fit w/ Loctite
PU = Push Fit
R = Running Fit
F = Force Fit
= Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .0005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 12/8/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

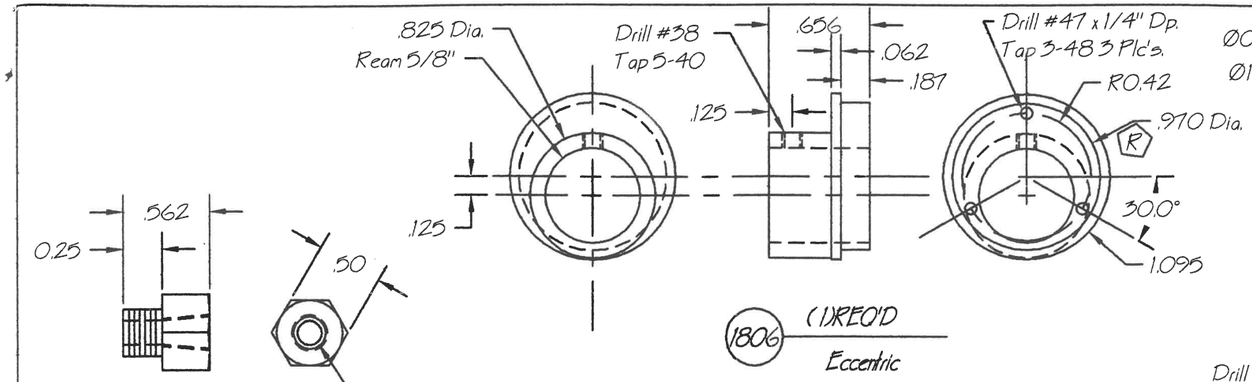
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-17

Piston Oiler Details

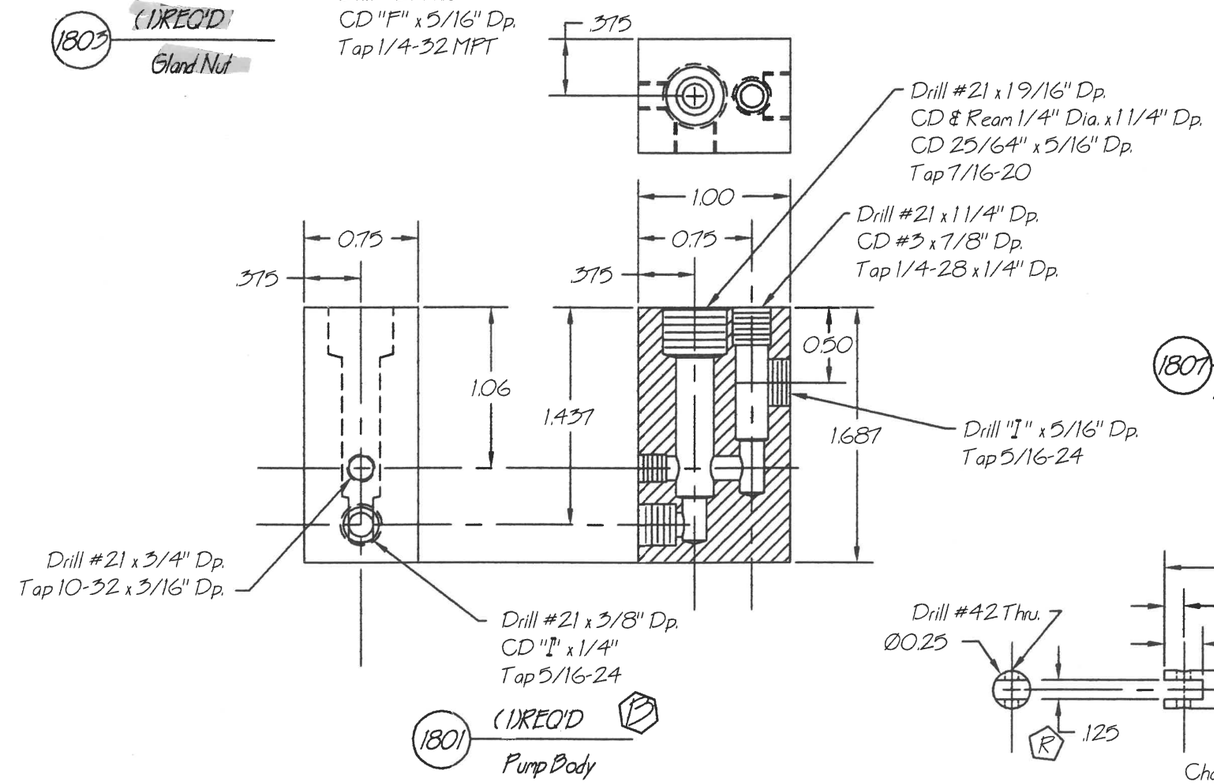
SHEET: 21 of 24 | REV.

REV.	BY	DESCRIPTION OR ECO #	DATE

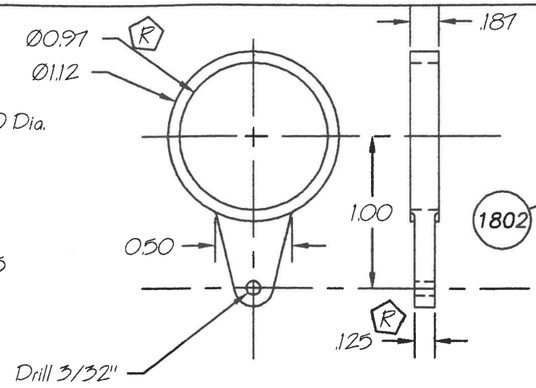


1806 (1) REQ'D — Eccentric

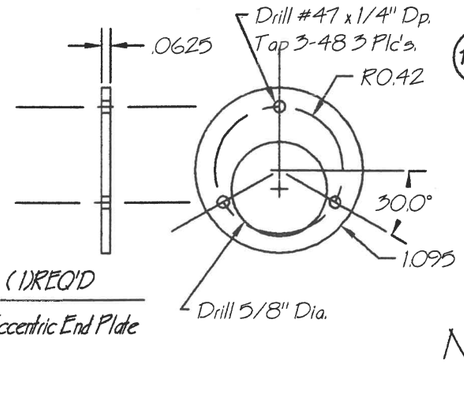
1803 (1) REQ'D — Gland Nut



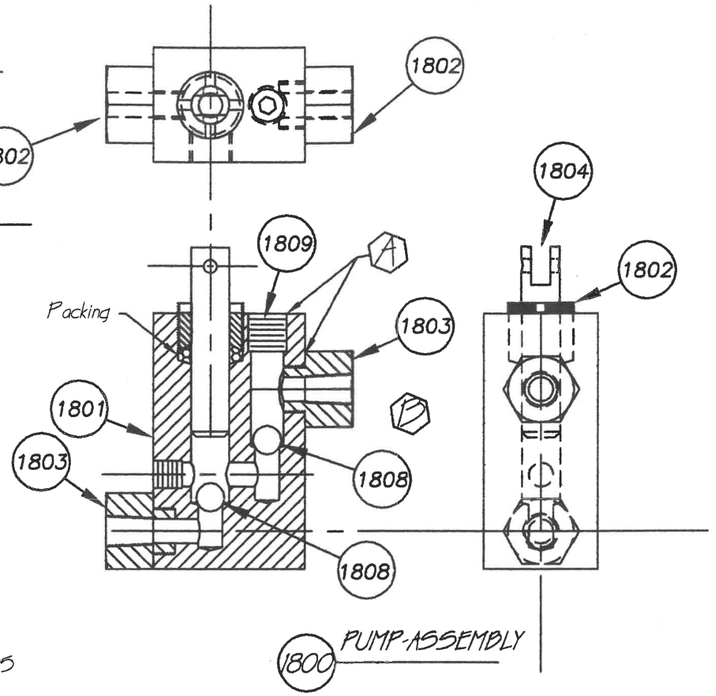
1801 (1) REQ'D — Pump Body



1805 (1) REQ'D — Eccentric Drive Arm

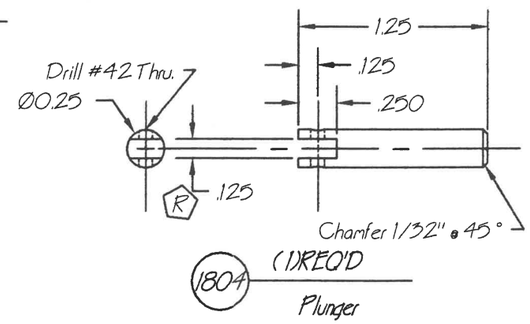


1807 (1) REQ'D — Eccentric End Plate

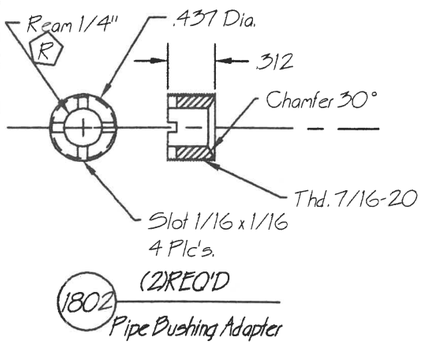


1800 PUMP-ASSEMBLY

Note: (A) Install Part 1803 Before Drilling Vertical Port
(B) Pump Body(1801) can be Profiled as Desired.



1804 (1) REQ'D — Plunger



1802 (2) REQ'D — Pipe Bushing Adapter

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1809	1	Plug Socket Head Set Screw 1/4-28 x 1/4" Lg.	Steel	
	1808	2	Ball 3/16" Dia.	Stainless Steel	
	1807	1	Eccentric End Plate 1.095" Dia. x .0625" Lg.	CRMS	
	1806	1	Eccentric 1.095" Dia. x .656" Lg.	CRMS	
	1805	1	Eccentric Drive Arm 1.120" x 1.68" x 1.875"	Brass	
	1804	1	Plunger 1/4" Dia. x 1 1/4" Lg.	Stainless Steel	
	1803	1	Gland Nut 7/16" Dia. x 5/16" Lg.	Brass	
	1802	2	Pipe Bushing Adpter 1/2" Hex x 9/16" Lg.	Brass	
	1801	1	Bar Stock 3/4" x 1" x 1 11/16" Lg.	Brass	
1800		1	Water Pump assembly		

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(PL) = Push Fit w/ Loctite
(PU) = Push Fit
(R) = Running Fit
(F) = Force Fit
= Machined Surfece

TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 01/16/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

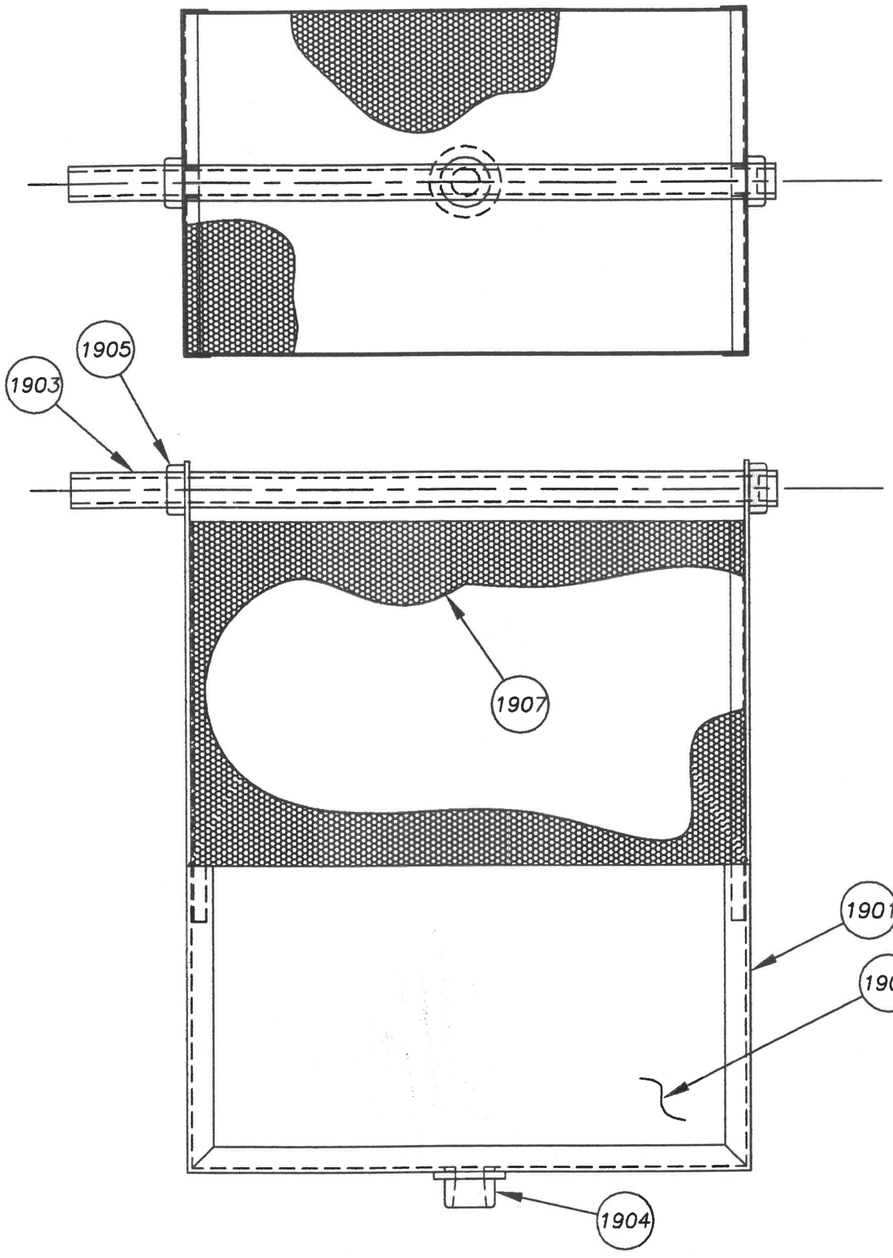
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-18

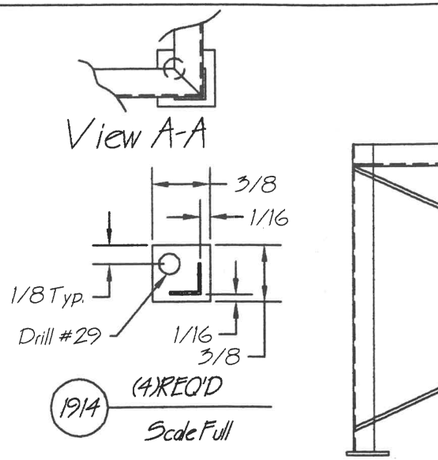
Water Pump Assembly

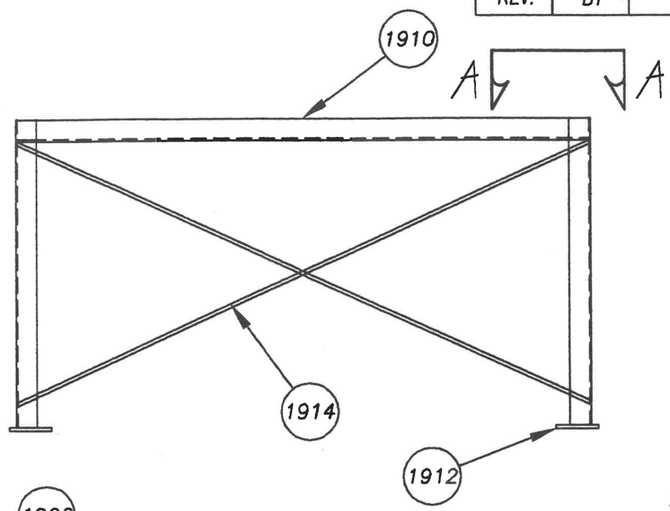
SHEET: 22 of 24 | REV.

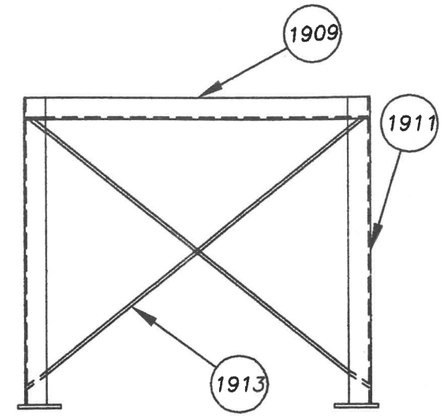
REV.	BY	DESCRIPTION OR ECO #	DATE



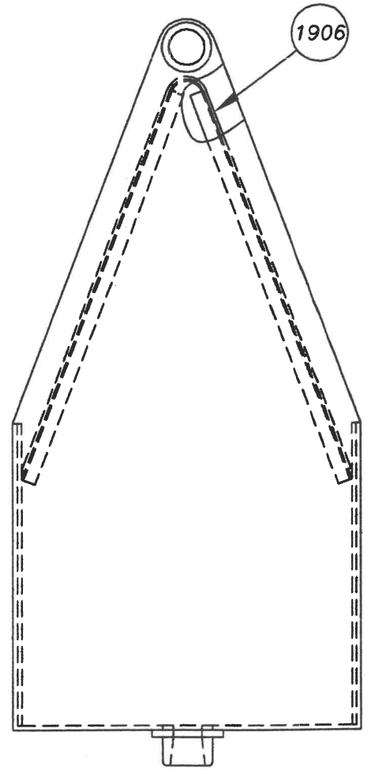
1900 Screen Cooler Assembly
3/4"=1"







1908 Screen Cooler Stand Assembly
3/4"=1"



NOTE: 1. For Details on Screen Cooler Tank See Sheet 1900A.
2. Fabrication Method by Soldering.

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	1914	4	Round Bar 1/32" Dia. x 5 1/2" Lg.	Brass	
	1913	4	Round Bar 1/32" Dia. x 3" Lg.	Brass	
	1912	4	Base Plates Sheet 1/32" x 3/8" x 3/8"	Brass	
	1911	4	Angle 3/16" x 3/16" x 2 11/16" Long	Brass	
	1910	2	Angle 3/16" x 3/16" x 5" Long	Brass	
	1909	2	Angle 3/16" x 3/16" x 3" Long	Brass	
1908		1	Screen Cooler Tank Stand Assembly		
	1907	1	Screen 18\18 5 3/4" x 4 15/16" Lg.	Brass	
	1906	2	Screen Mount Angle 1/8" x 1/8" x 5 3/4" Lg.	Brass	
	1905	2	Mounting Coller 7/16 OD x 5/32" Lg.	Brass	
	1904	1	Tank Drain 5/8" Dia. x 11/32" Lg.	Brass	
	1903	1	Tubing 5/16" OD x .040" Wall x 6 3/16" Lg.	Brass	
	1902	2	Tank Sides Sheet .030" x 2 15/32" x 4 15/16"	Brass	
	1901	1	Sheet .030" x 3 3/8" x 17 1/2" Lg.	Brass	
1900		1	Screen Cooler Tank Assembly		

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TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 01/18/2005 | SCALE: 3/4"=1" | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

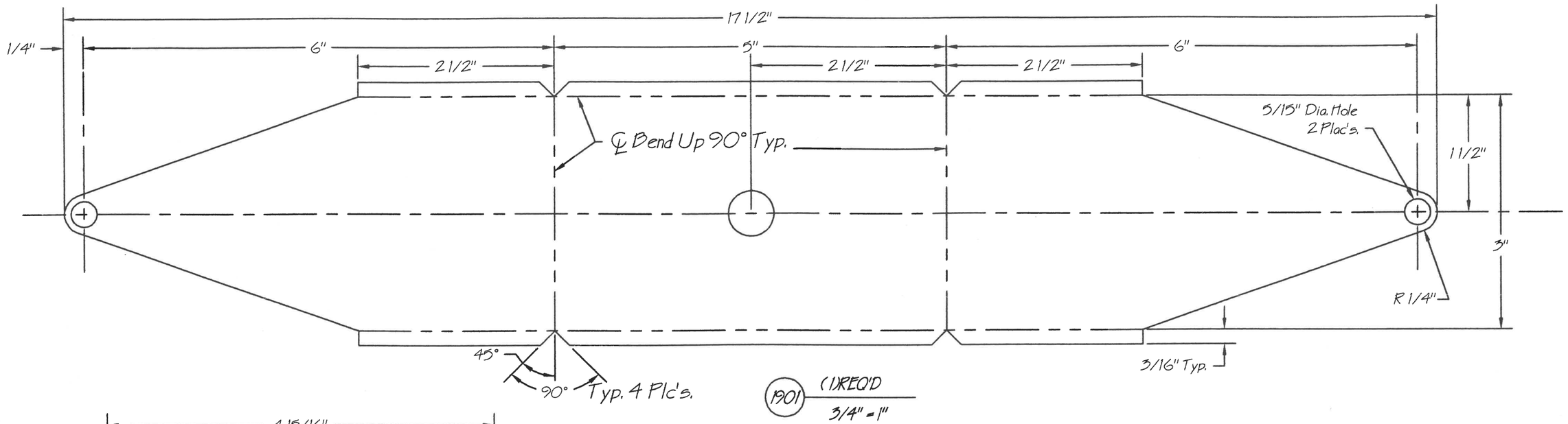
DESCRIPTION: Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. FM-19

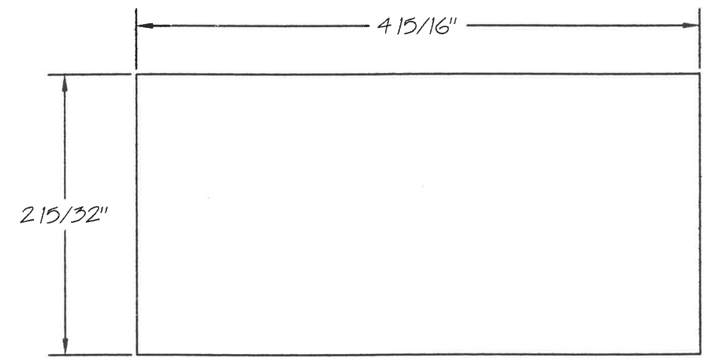
Screen Cooler Tank Assembly

SHEET: 23 of 24 | REV.

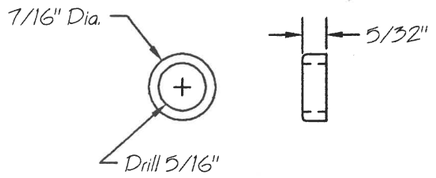
REV.	BY	DESCRIPTION OR ECO #	DATE



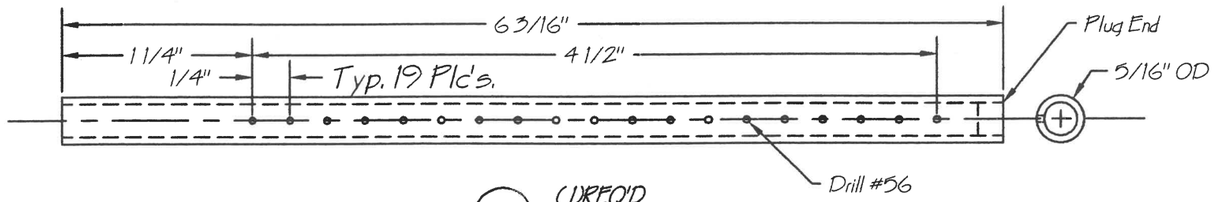
1901 (1)REQ'D
3/4" = 1"



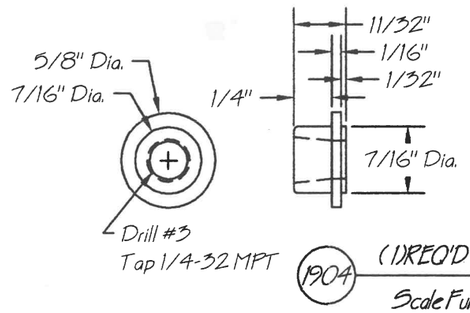
1902 (2)REQ'D
3/4" = 1"



1905 (2)REQ'D
Scale Full



1903 (1)REQ'D
Scale Full



1904 (1)REQ'D
Scale Full

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TOLERANCES:
.X ± .01
.XX ± .001
.XXX ± .005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 01/18/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

DESCRIPTION
Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO.
FM-19A

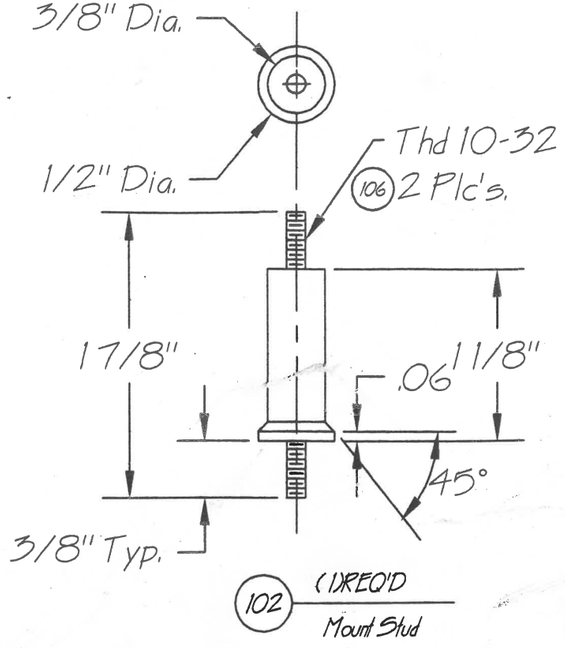
Screen Cooler Tank Details

SHEET: 24 of 24 | REV.

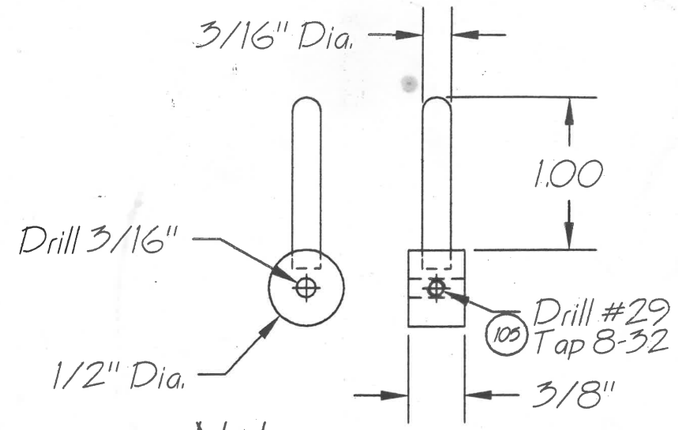
REV.	BY	DESCRIPTION OR ECO #	DATE

Full Scale Pattern (cut out)

(101) (1) REQ'D — Bell Crank

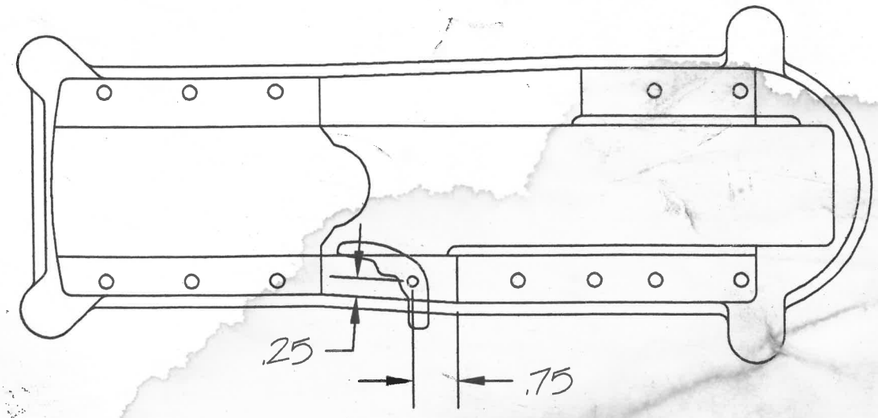


(102) (1) REQ'D — Mount Stud



Note: Mounts to Igniter piviot arm shaft

(103) (104) (1) REQ'D — Actuator Arm



Base (Casting # TS121T)

(100) Accessory — BATTERY-SAVER

ASSY.	ITEM	QTY	DESCRIPTION	P/N MATL.	DIST.
	106	1	Self Locking Nut 10-32	Steel	
	105	1	Set Screw 8-32 x 3/16" Lg.	Steel	
	104	1	Actuator Arm 3/16" Dia. x 13/16" Lg.	CRMS	
	103	1	Actuator Arm Boss 1/2" Dia. x 3/8" Lg.	CRMS	
	102	1	Bell Crank Mounting Stud 1/2" Dia. x 17/8" Lg.	CRMS	
	101	1	Bell Crank 18Ga. x 3/4" x 13/4"	CRMS	
100		1	Battery Saver For Fairbanks Engine		

TOLERANCES:
X ± .01
.XX ± .001
.XXX ± .005

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

Fairbanks-Morse, Type N; Hit-N-Miss Engine

DATE: 1/5/2005 | SCALE: FULL | DRN. BY: W. Austin | DESIGNER: Tom Stuart | Model Scale: 1/6±

DESCRIPTION

Tom's Engine Shed c/o Tom Stuart
1157 Fabry Rd. SE Salem, OR 97306

DRAWING NO. BS-1

Battery Saver

SHEET: 1 of 1 | REV.